

"DUNEDIN IN 1901"
A Study in Historical Urban Geography

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by
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CHAPTER 1

INTRODUCTION

The purpose of this study is to examine the geographic character of Dunedin in 1901. It is a reconstruction of the urban geography of this city 60 years ago. "The genetic approach to geographical study leads inevitably to an examination of the past";⁽¹⁾ but not only is the past an aid to the understanding of the present - it is worthy of a study in itself.⁽²⁾

The choice of 1901 as the date for this study is not an arbitrary one. By that year Dunedin had passed through its period of greatest expansion. No longer was she largest in population, or leader in manufacturing status. While still a large manufacturing city, by New Zealand standards, she had lost to Auckland her one-time supremacy. Thus 1901 marks the end of an era.

The advent of the twentieth century heralded many changes, social as well as industrial in the character of Dunedin. A cursory comparison of the Land Use map of the Urban Region in 1901, with the Land Use map prepared by A.D.Tweedie in 1949,⁽³⁾

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1. P.James and C.Jones, Ed: American Geography, Inventory and Prospect, Syracuse, 1954, p.71.
 2. Ibid., p.89.
 3. A.D.Tweedie: Metropolitan Dunedin, University of New Zealand Thesis, (unpublished), 1950.

suggests that Dunedin has not expanded in area as much as the other main centres. G. J. R. Linge, in his article on The Location of Manufacturing in New Zealand,⁽⁴⁾ also suggests, that Dunedin has not developed industrially. Whether these views are true or not, and why, is a study for another thesis.

For the purposes of this thesis the Urban Region of Dunedin in 1901 was defined as the continuously built-up portion of the City of Dunedin and the suburban boroughs. Surrounding farmland was excluded from this Urban Region even if it came within the boundaries of the various administrative units that made up Dunedin. The break between rural and urban land use was more definite in 1901 than it is today. (The definition of the Rural-Urban Fringe, where it existed in 1901, is discussed in more detail in Chapter Five).⁽⁵⁾

Chapter Two deals with the growth of Dunedin from 1848 to 1901. This historical outline considers the general development of the city; it includes a discussion of such phenomena as the site of Dunedin, the progress of land reclamation from the harbour, the growth of the commercial and industrial areas within the Urban Region, and the provision of public utilities. In this chapter the scene is set for a consideration of Dunedin at the turn of the century.

The body of the work deals with the population structure,

4. G.J.R.Linge: 'The Location of Manufacturing in New Zealand', New Zealand Geographer, Vol. 13, No. 1, 1957, p.7.

5. For consistency all numbers under 10 are spelled out.

land use patterns, and functions of the Urban Region in 1901. This is accomplished in three chapters. Chapter Three is devoted to the general structure of the town, and the nationality, age, sex, and distribution of the Population; Chapter Four considers the general functions of Dunedin in 1901; and Chapter Five is an examination of Dunedin by sub-regions. Each sub-region is analysed to show its distinctive geographic character, and its place in the total geographic pattern of the Urban Region.

Chapter Six deals with the area surrounding Dunedin in 1901: The Rural-Urban Fringe, a Rural Zone, and the more extensive Tributary Region are each considered in turn.

The conclusion, Chapter Seven, evaluates the character of Dunedin in 1901 and draws comparisons between Dunedin at the turn of the century and today.

In spite of the wealth of historical material available to the student on Otago, no detailed historical studies of Dunedin have been made by historians or geographers. Both McIntock's History of Otago⁽⁶⁾ and Reed's Story of Early Dunedin⁽⁷⁾ are useful for reconstructing the growth of the town, but even this material, like most other available to the scholar is social and political in flavour rather than geographical. Indeed, few historical-urban studies have been made by geographers in New

6. A.H.McIntock: The History of Otago, Dunedin, 1949.

7. A.H.Reed: The Story of Early Dunedin, Wellington, 1956.

Zealand. R. W. Armstrong carried out a study of Auckland in 1896.⁽⁸⁾ (Unfortunately he failed to state clearly the methods by which he constructed his Land Use map.)

The key to the present study was the production of a Land Use map of Dunedin in 1901. This had to have sufficient detail to enable the precise forms and functions of Dunedin to be measured. In an address to the Seventh Science Congress of the Royal Society, L. L. Pownall wrote: "A study of the different areas of urban land use depends entirely upon the construction of maps, and involves two main parts: an analysis of the land use patterns of a town as a whole, and the structure of the individual areas."⁽⁹⁾ This is as true for a study in historical geography as in contemporary geography. In this thesis the Land Use map was constructed on the base map of the Dunedin Regional Planning Authority at a scale of one inch to five chains,⁽¹⁰⁾ on which was plotted information derived from Valuation Rolls, Ratebooks, Street Directories and extant maps. A brief annotated survey of the material available for the construction of an Urban Land Use map of Dunedin in 1901, will assist in understanding the method in this thesis.

An extant map of Dunedin in 1901⁽¹¹⁾ at a scale of one inch

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8. R.W.Armstrong: Auckland in 1896, University of N.Z.Thesis, (unpublished), 1959.
 9. L.L.Pownall: 'Urban Geography - Aims and Methods', Report of the Seventh Science Congress, 1951, p. 147.
 10. Dunedin Regional Planning Authority: Map of Metropolitan Dunedin, Sheets 1 to 8, 1956, scale: one inch to five chains, Dunedin.
 11. W.T.Neill: Field Sheets of the Military Topographic Plan of Dunedin and Suburbs, (unpublished), No.1, Sheet 12, scale: one inch to 20 chains, Lands and Survey Dept., Dunedin.

to 20 chains showing the built-up area was used as the basis for much of the later detailed work. Built-up areas on this extant map were shaded black; however, this often gives a false impression for a block thus shaded may appear completely occupied whereas in fact it may contain only a few houses. The extant map at 1901, therefore, can only be used to give a general idea of the limits of the built-up area.

For Dunedin City in 1901, that is the area within the Town Belt, there is in existence a series of Drainage Board Plans numbering some 132 sheets that were produced between 1903 and 1906.⁽¹²⁾ These maps at scales of one inch to 40 feet and one inch to 100 feet show the location of every building at that time within the Town Belt.

For part of the central core there are a number of 'Insurance Maps for 1892'⁽¹³⁾ showing buildings and in some cases the number of storeys.

A series of photographic views covers the whole central part of Dunedin and a few photographs partly cover the outer suburbs.⁽¹⁴⁾ These photographs were mainly taken in 1898 during the Dunedin Jubilee Exhibition.

12. S. George, et. al: Dunedin Drainage and Sewage Board City of Dunedin Plans, Nos. S1-S132, 1903-6, scales: one inch to 40 feet, and one inch to 100 feet, Drainage Board, Dunedin.

13. F.O. Jones: Structural Plans of the City of Dunedin, Ignis et Aqua Series, 1892, scale: one inch to 40 feet, Otago and Southland Underwriters Assoc., Dunedin.

14. They are held in the Hecken Library.

Extant written material is more extensive than the map data. District Valuation Rolls⁽¹⁵⁾ listing the type of property and its value exist for all of the local boroughs. Ratebooks however, are only available for Dunedin City, and the boroughs of Mornington and Maori-Hill.⁽¹⁶⁾

Street Directories, both Stone's Otago and Southland Directory⁽¹⁷⁾ and Wise's New Zealand Post Office Directory⁽¹⁸⁾ are available for 1901.

The other materials used in constructing the urban land use map, were the map of Dunedin published in 1956 by the Regional Planning Authority at a scale of one inch to five chains,⁽¹⁹⁾ and the block and section plans of Dunedin, supplied by the Lands and Survey Department at a scale of one inch to 20 chains.⁽²⁰⁾

For the purpose of describing the method employed in constructing the land use map, Dunedin can be divided into two areas. For Dunedin City - the area within the Town Belt - the building data was transferred from the Drainage Board Plans to the five chains base map of the Regional Planning Authority.

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15. District Valuation Rolls for the boroughs of Dunedin City, Caversham, Mornington, Maori-Hill, North-East Valley, Roslyn, South Dunedin and St. Kilda, 1899-1902, Valuation Dept., Dunedin.
 16. Dunedin City Ratebook 1901, Roslyn Borough Ratebook, 1901, Mornington Borough Ratebook 1901, (unpublished), Dunedin City Council.
 17. J.Stone & Co: Otago and Southland Directory 1902, Dunedin, 1902.
 18. H.Wise, & Co: New Zealand Post Office Directory, 1902, Dunedin, 1902.
 19. Dunedin Regional Planning Authority : op.cit.
 20. New Zealand Lands and Survey: Dunedin and Environs, 1934, scale: one inch to 20 chains, Wellington.

As many buildings in the central core, already in existence in 1901, are still standing it was possible from work in the field to double-check the actual area they occupied. Buildings were then located in Stone's and Wise's Directories, and their uses established from these sources. As a further check the Dunedin City Ratebook for 1901 and Valuation Rolls for 1899-1902 were used in conjunction with the legal block and section maps to establish the location of buildings and their use. The block and section numbers were laid down before 1901 and the same plan numbers apply today.

In the present study the legal block and section numbers were located first, in the Valuation Rolls and Ratebooks, second, on the legal block and section map, and third, the location and land use of the building was plotted. As it is still possible to see the legal section outlines on the recent map of the Regional Planning Authority it was relatively easy to transfer all of the historical material to this base map.

Valuation Rolls held in the Valuation department, Dunedin were used in the same way as the method employed for Dunedin City, to reconstruct the land use maps for the boroughs outside the Town Belt. For Mornington and Maori-Hill the checking of the land uses was carried out from the Borough Ratebooks; for other boroughs, checking of the Valuation Rolls was possible only from street directories.

The complete Land Use map of Dunedin in 1901 has been drafted in six sheets so that reference can be made readily to the relevant section of the map as the text is read. For this reason, constant references to the Land Use map are not made

in the text. (21)

Other material used in this study consisted mainly of official government publications. The Appendices to the Journals, House of Representatives, (22) A Census of the Colony of New Zealand 1901, (23) and the Year Book 1901, (24) were valuable sources of information. Newspapers, contemporary writings and innumerable local body reports helped to establish the character of Dunedin in 1901.

Most of the material for this study was gathered in Dunedin and Christchurch and from Wellington in late 1959 and early 1960. This has been mainly a documentary study. At the same time, this study in historical urban geography has shown to the writer that field work is as essential to the historical geographer as to the contemporary geographer - an opinion stated by Carl Sauer some 19 years ago. (25)

21. See Appendix 1.

22. Appendices to Journals, House of Representatives, Wellington, 1900 to 1902.

23. A Census of the Colony of New Zealand 1901, Wellington, 1902.

24. New Zealand Official Year Book 1900 and 1901, Wellington, 1899 and 1900.

25. C.Sauer: 'Foreword to Historical Geography', A.A.A.G., Vol. 31, No. 1, 1941, p.14.

CHAPTER 11

THE GROWTH OF DUNEDIN 1848 TO 1901.

The Setting.

Frederick Tuckett, the New Zealand Company surveyor, reported in 1846 -

"The Harbour Otakou or Otago is 13 miles long with an average breadth of two miles, with six fathoms of water for seven miles up, and three fathoms for the remainder. On either side the forest remains unbroken; good timber is abundant and the soil appears to be fertile. A space of less than a quarter of a mile intervenes between the head of the harbour and the ocean; here is a water frontage of unwooded land rising gently inland. It offers an ornamental and commodious site for a town, most suitable in every way".(1)

Thus the site of the future city of Dunedin was first described. (Fig. 1). To the north were extensive mud flats and marshy ground backed by the surrounding hills. To the south was a great swamp separated from the sea only by a line of sandhills, connecting with the amphitheatre-like form of the encircling hills. Originally the site of the Scottish Free Church settlement was to have been Port Cooper, but Frederick Tuckett, who was appointed to conduct the original exploration, chose the Otago block as most suitable.

1. J. Wilson (Ed.): Reminiscences of the Early Settlement of Dunedin and South Otago, Dunedin, 1912, p.11.

DUNEDIN AND VICINITY 1901

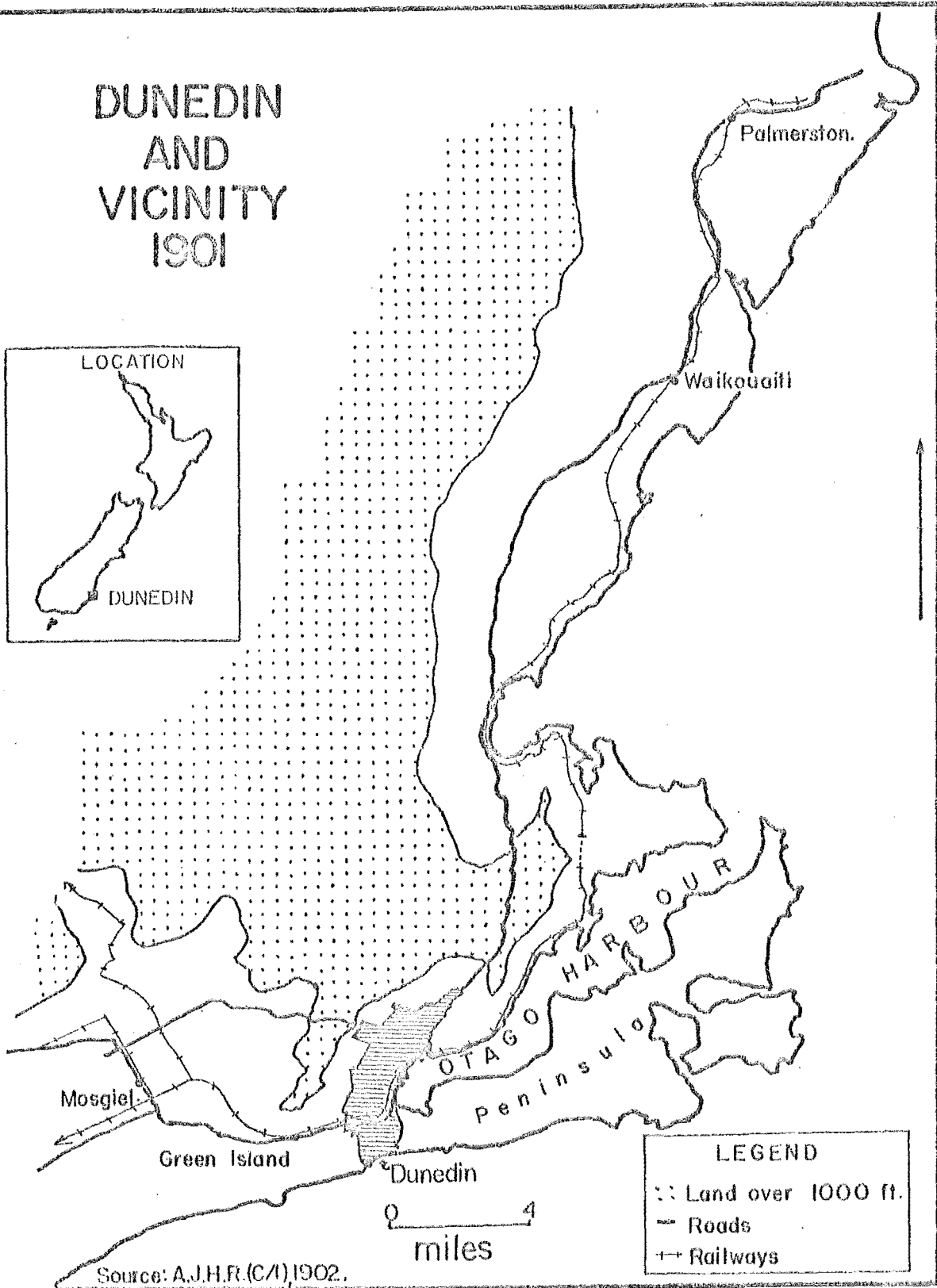
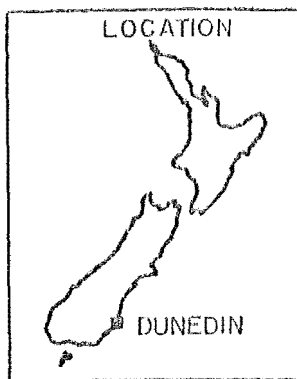


Fig. 1.

Here Dunedin was surveyed.

Little is known of the history of Dunedin prior to the coming of the white man, but it seems that there was a permanent settlement of the Naitahu-Ngati-mamoe somewhere along the shore. This Maori settlement was never very extensive, nor were there many inhabitants. The pa probably covered the area between the present Post Office and the Leith on the north-eastern edge of the North Dunedin flat. There is also some evidence for a pa at Andersons Bay on the south-western corner of the present city area, but its history is unknown.⁽²⁾

With the appearance of the whalers the Maoris in the district tended to congregate at Otakau. Altogether there were two or three thousand Maoris at the Otago heads in 1836.⁽³⁾ When it was definitely known that a European settlement was to be made, a few Europeans moved to the Upper Harbour to await the arrival of the colonists. Even so, when the first settlers arrived, there were only five buildings on the chosen site.⁽⁴⁾

The hilly landscape of Dunedin is basically derived from the results of volcanic action in an earlier period. The sharply defined hills and valleys of Dunedin were developed by the processes of normal erosion acting on the worn down masses of the old volcanoes. The original forms were not entirely volcanic,

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2. A. Bathgate (Ed.): Picturesque Dunedin or Dunedin and its Neighbourhood in 1890, Dunedin, 1890, p.6.
 3. A. Bathgate (Ed.): Dunedin and its Neighbourhood in 1904, Dunedin, 1904, p.4.
 4. T.M. Hocken: Contributions to the Early History of N.Z., London, 1898, p.83.

but were developed rather from "a volcanic complex of lava fields by strongly deforming earth movements."⁽⁵⁾

The site was broken by a series of bush-covered ridges, which ran down to the water's edge, or ended in swampy flats. Between these spurs flowed streams, some rapid and clear, others sluggish and marshy. Thus streams originally followed down the line of what are now Maclaggan Street, York Street-Andrew Street, and Frederick Street.

The "Flat" - that is the area of present day South Dunedin and St. Kilda - was only a little above high water mark. This was the most extensive area of flat land. The only barrier to the sea was a low line of sandhills. The shoreline cut in closer than it does today, and the lowlying alluvial flat, between the slope of the foothills and the shoreline, was no more than a quarter of a mile wide. In 1848, the line of the present day Anderson's Bay Road was the approximate boundary between tidal water and an impassable swamp. The sea at that time covered what was later to be known as Market Reserve, between Transport Place and Manor Place. The old shoreline ⁽⁶⁾ followed the base of the large promontory of Bell Hill, swung in to King Street north of Bell Hill, ⁽⁷⁾ and finally formed the large embayment of "Lake

5. B.J.Garnier: The Face of Otago, Dunedin, 1948, p.12.

6. This shoreline is plotted on the map 'The Progress of Reclamation' (Fig. 5) which is inserted with the discussion of reclamation.

7. The sea sometimes encroached as far as George Street. See A.Bathgate: Picturesque Dunedin or Dunedin and its Neighbourhood in 1890, Dunedin, 1890, p.15.

Logan".⁽⁸⁾ The land rose steeply from the shoreline to the Kaikorai Valley ridge, dropping down to the Valley itself before rising again as the low foothills of the Flagstaff - Mt. Cargill Range. The block-diagram shows the considerable amount of Dunedin that is truly steep land, difficult for both settlement and roading. (Fig. 2).

On to this broken topography was superimposed a pre-arranged plan. In 1846, the preliminary surveying of the allotments was carried out by C. H. Kettle, a New Zealand Company surveyor. The survey was completed about June 1847 and the maps forwarded to London. Kettle had been ordered to make Dunedin as much like Edinburgh as possible. Thus, Kettle's plan produced as far as was practicable the special features of the Scottish capital. However, it was never Kettle's task to make the streets, and when his work was finished the survey consisted mainly of parallel lines cut through the bush. To survey lines across extensive mud flats, flax covered swamps, and bush clad slopes, was a sufficiently exacting task.

To obtain drainage and reasonable gradients this topographically complex site required skill and training. These aptitudes however, were not possessed by Kettle or his fellow surveyors. Consequently, Kettle's plan of the new town, "demonstrated most convincingly the great gulf that lies between theoretical planning and its practical application".⁽⁹⁾

8. Now Logan Park. Refer for location to (Fig. 3).

9. A.H. McLintock: The History of Otago, Dunedin, 1949, p.146.

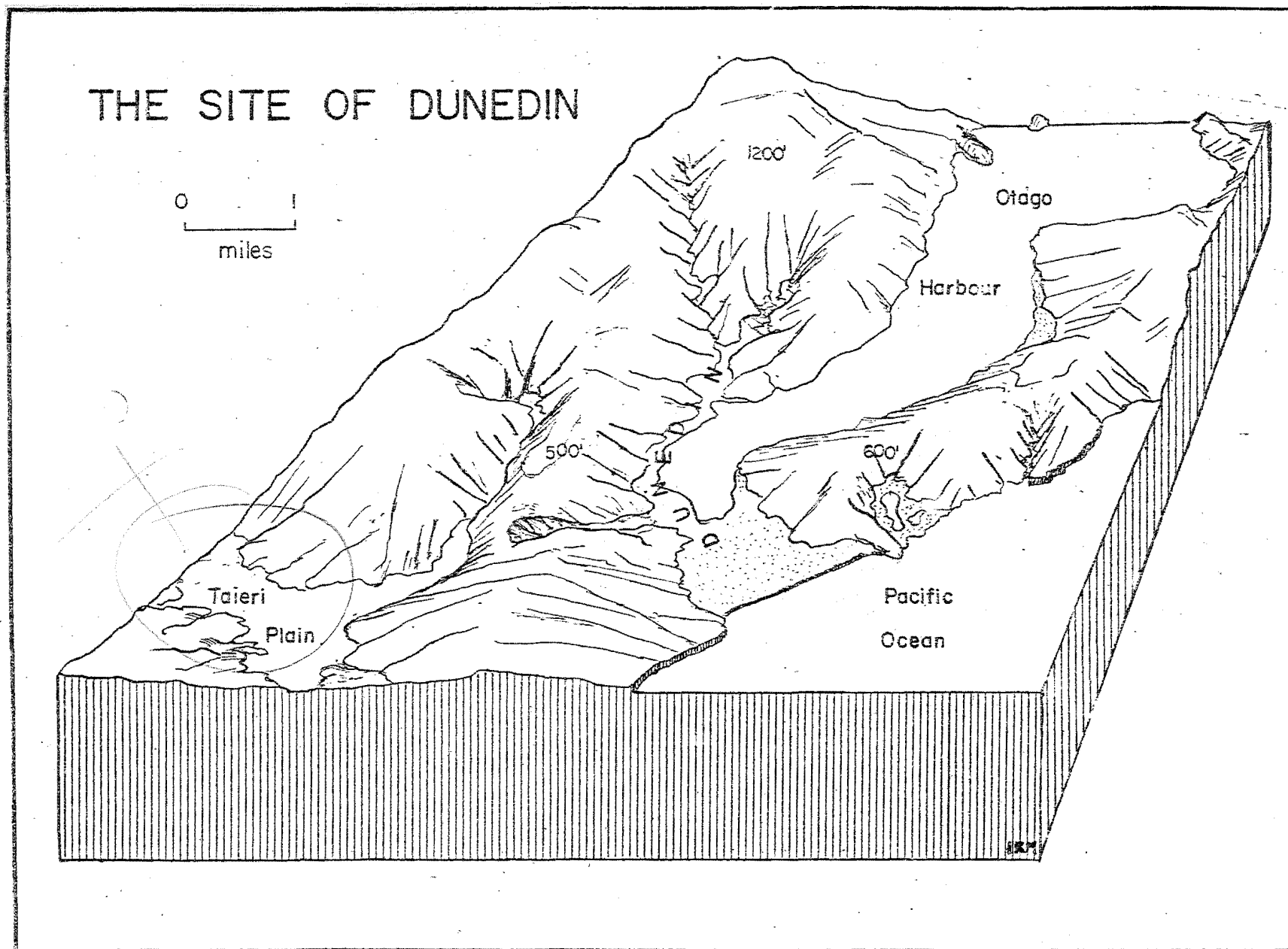


Fig.2.

Mr. MacCabe is quoted in Picturesque Dunedin: "Climate! Dunedin has no climate, only mixed samples".⁽¹⁰⁾ It is useful to bear in mind that while there is much cloudy weather, it was an essentially mild climate to the pioneer settlers from Edinburgh. However, while the rainfall is low - 37 inches - much of it falls as mist and fine drizzle on a large number of rain days, as the early settlers found to their discomfort. Dunedin lies in a humid climatic area.⁽¹¹⁾ Temperatures have a low range, but hot weather with temperatures over 70°F., is not unusual in January and February. Although the sunshine values are among the lowest recorded in New Zealand, long periods without the sun are uncommon. The encircling hills maintain an effective barrier to strong winds and give Dunedin a calmer atmosphere than would otherwise prevail. There is a notable similarity between the weather and climate at Dunedin, and that of the British Isles: the cold winters, cool summers, the reliable and evenly distributed rainfall of moderate intensity, and the low sunshine hours.

With this setting in mind it is possible to proceed with a survey of Dunedin's urban development to 1901.

The Emergence of Dunedin.

The idea of a Free Church settlement and the founding of the Otago Association, arose out of the disruption within the Scottish Church. An association of influential laymen was formed, and by

10. A. Bathgate: op.cit., p.298.

11. B.J. Garnier: N.Z. Weather and Climate, Christchurch, 1950, p.9.

agreement between the New Zealand Company and the Association, the latter, with a grant of 400,000 acres from the Company, was authorised to carry out the settlement of Otago. The block of land was to be surveyed into town, suburban and rural lots and the prices were to be fixed, George Rennie's farsighted plan⁽¹²⁾ provided for an advance party of builders and labourers to follow the surveyors. However, when the first emigrant ships, the John Wickeliffe and Philip Laing arrived early in 1848, Dunedin was still "a wild uninhabited looking place".⁽¹³⁾ The pioneers landed at Dunedin in ships' boats at the foot of Manse Street, where the first jetty was built of rough posts and planks.

A few days after the arrival of the Philip Laing, the second of the two vessels to arrive, those who had already paid for their sections chose their properties. They made their selections along Princes Street, which was represented by two survey lines and consisted of flax, grass, stumps, trees, creeks, and bogs.⁽¹⁴⁾ Soon huts began to appear, none of which was more than twelve feet square. While some of the wealthier settlers brought materials with them, the majority had to depend on the natural resources of the new country to which they had come. Timber was plentiful for the bush grew down to the water's edge, and five sawyers were soon at work in the bush on the sides of the harbour.⁽¹⁵⁾ Most of the early houses were built of "wattle and daub". They

12. The story of the Otago Association and its plans is ably told in, A.H. McLintock: The History of Otago, Dunedin, 1949.

13. J. Wilson (Ed.): Op.cit., p.30.

14. J. Wilson (Ed.): Op.cit., p.35.

15. J.E. Brown: Notes on Early Industry in Dunedin, 1884, Hocken Library, Dunedin, (unpublished), Vol. 43, p.2.

consisted of a framework of posts with the lower ends fixed firmly in the ground, and the walls formed by laying small poles (known as wattles) between the posts about six inches apart. The walls were then filled with worked clay, and plastered inside and out to cover the wattles. The roofs were of thatched grass, raupo, and occasionally shingles.⁽¹⁶⁾ Those who brought their materials with them built the first wooden houses in Dunedin.

Gradually, the pioneers chose their sections, houses were built, and the labourers set to work on the formation of Princes Street. By the close of the first year the once unbroken wilderness of the bush and scrub, flax and fern, had given way to a sprinkling of houses and other buildings. These were mainly clustered south of Bell Hill in that part of Princes Street between the corner of Manse and Dowling Streets. (Fig. 3).

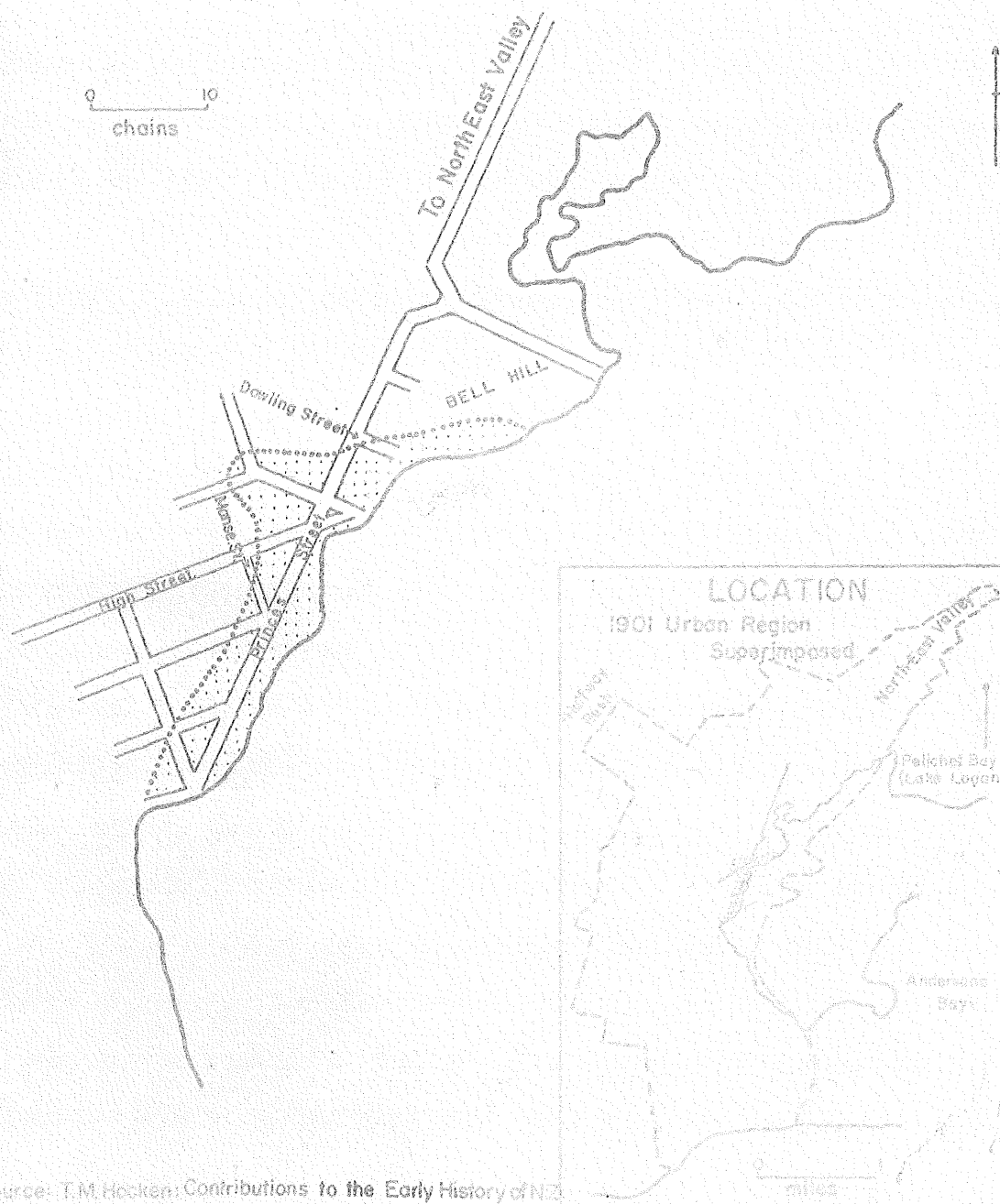
By 1850 - the close of the second year of settlement - the road from the jetty was metalled to Princes Street, mainly to facilitate the carriage of goods from the wharf. There was also a wooden bridge over the stream which intersected Princes Street. A metalled footpath led around the shore to the combined church and school near the foot of Dowling Street. (Fig. 3). The road to North-East Valley was unmetalled and impassable in all but fine weather. A dray track of sorts had been constructed up to Rattray Street to the hill top, along the ridge, and then across the Kaikorai Valley to Half Way Bush. (Fig. 3). W. H. Valpy⁽¹⁷⁾

16. *Ibid.*, p.4.

17. Valpy was an English capitalist who arrived in Jan., 1849.

DUNEDIN IN 1850

THE EXTENT OF SETTLEMENT



Source: T.M. Hocken: Contributions to the Early History of NZ

Fig. 3

Key?

Should the drag track routes be marked?

had formed a road to his farm at Ferbury, but neither this nor the road up Rattray Street was metalled. A road leading to the Green Island bush was also unmetalled. A contemporary writes of the roads: "Dirt and filth are cast into the streets, holes are dug for sand and clay, and only in dry weather can they be negotiated with comfort".⁽¹⁸⁾ Much of the scrub on either side of the principal roads had been cleared, and an attempt had been made to drain some of the swampy areas.

In all, there were about a hundred dwellings at the end of the second year, many of them with orderly fenced gardens of vegetables and flowers. (Fig. 3). In October 1849, the European population of Dunedin had reached 444. (Fig. 4). Some 263 occupied rural land close to the town. By 1900 all of this land had become suburban.⁽¹⁹⁾ Weatherboard houses were beginning to outnumber those of wattle and daub. Other buildings included a combined church and school, two hotels, and twenty stores. While all trades were represented in the settlement, that of storekeeping seems to have been the most alluring. Anyone who cared, dabbled in this trade.

In 1852 Otago was established as one of the provinces of the South Island but the town of Dunedin was still confined to the southern side of the obstructive Bell Hill. A hospital had been erected on the side of the present Town Hall, "a little out of the busy part of the town towards the North-East Valley",⁽²⁰⁾

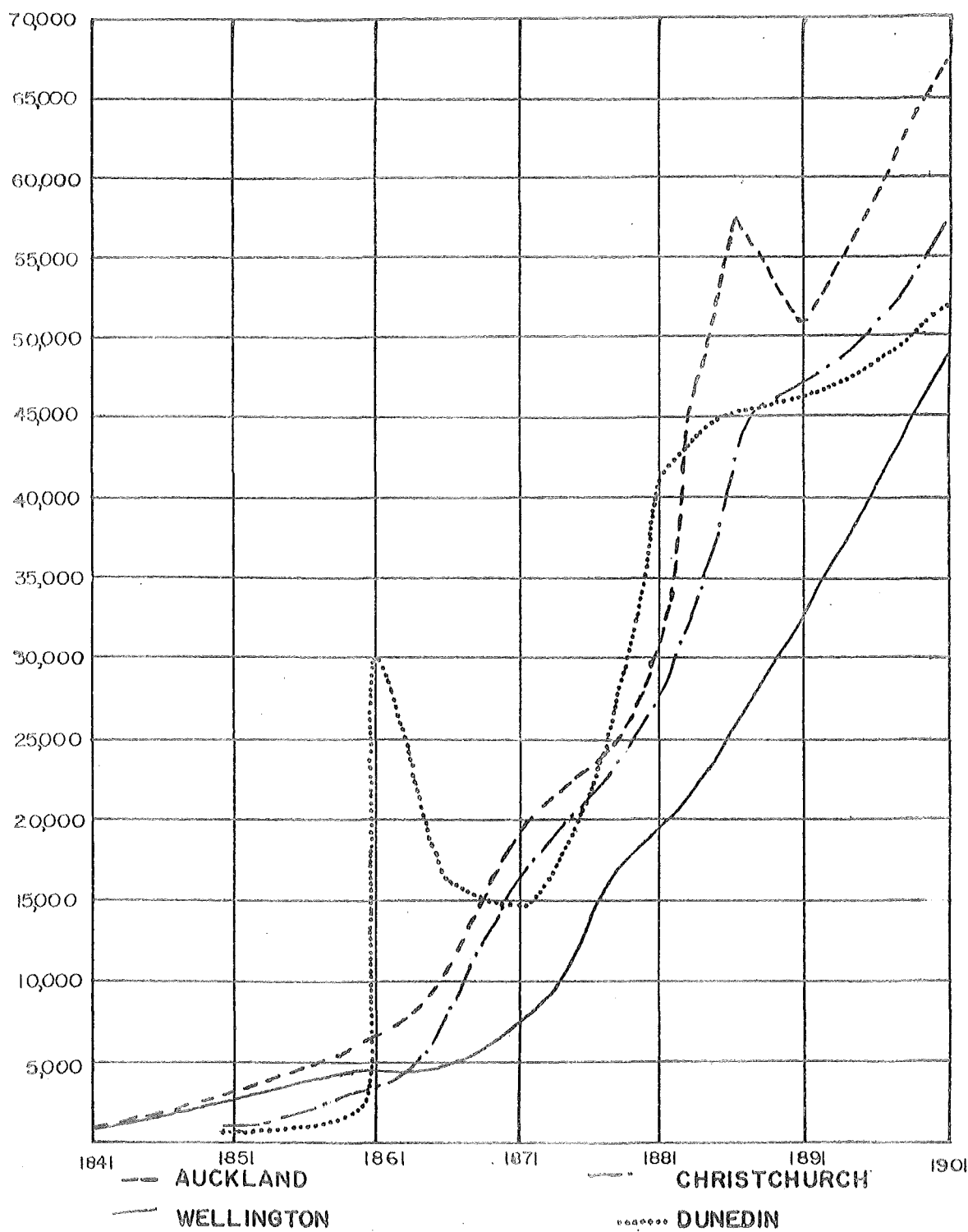
18. A.H.Reed: The Story of Early Dunedin, Wellington, 1956, p.73.

19. A.H.Reed: op.cit., p.59.

20. Ibid., p.64. For location see (Fig. 3).

POPULATION GROWTH 1841-1901

THE FOUR MAIN CITIES



SOURCE: N.Z. Census.

Fig. 4.

as one Dunedin settler described his town in the early 1850's.[?] A road had at last been built over the obstructive Bell Hill as far as Pelichet Bay and North-East Valley. Several houses had been built in the Valley, and quite a large acreage brought under cultivation. Foot communication was possible to Andersons Bay by a path that ran along the edge of the swamps bordering the harbour. However, horses and cattle still had to make the detour along the hills behind Caversham and along the coastal sand dunes.

The settlement was extremely isolated in the early years. Often months elapsed before news was received from Auckland or the other centres. The hopelessly haphazard communications depended entirely on small coastal vessels. Despite this isolation, Dunedin soon developed its cultural interests. A small library had been brought out by the settlers and popular lectures were soon instituted. There was no lack of lighter entertainments, with both public and private concerts.

By 1853 the settlement could claim the unenviable distinction of being outnumbered by all others except New Plymouth.⁽²¹⁾ Perhaps one reason lies in the original plan for a rigid clan[?] settlement. By 1853, however, many people were striving for, and adopting a more liberal and enlightened attitude.

The first local authoritative body was the Board of Commissioners, established under the 'Dunedin Public Lands Ordinance' of 1854. However, it was necessary to have a more suitable authority, with powers to assist in the development of the town, and to watch over the Public Welfare. Under a Town Board Ordinance Act passed in 1855, Dunedin was incorporated as a Town

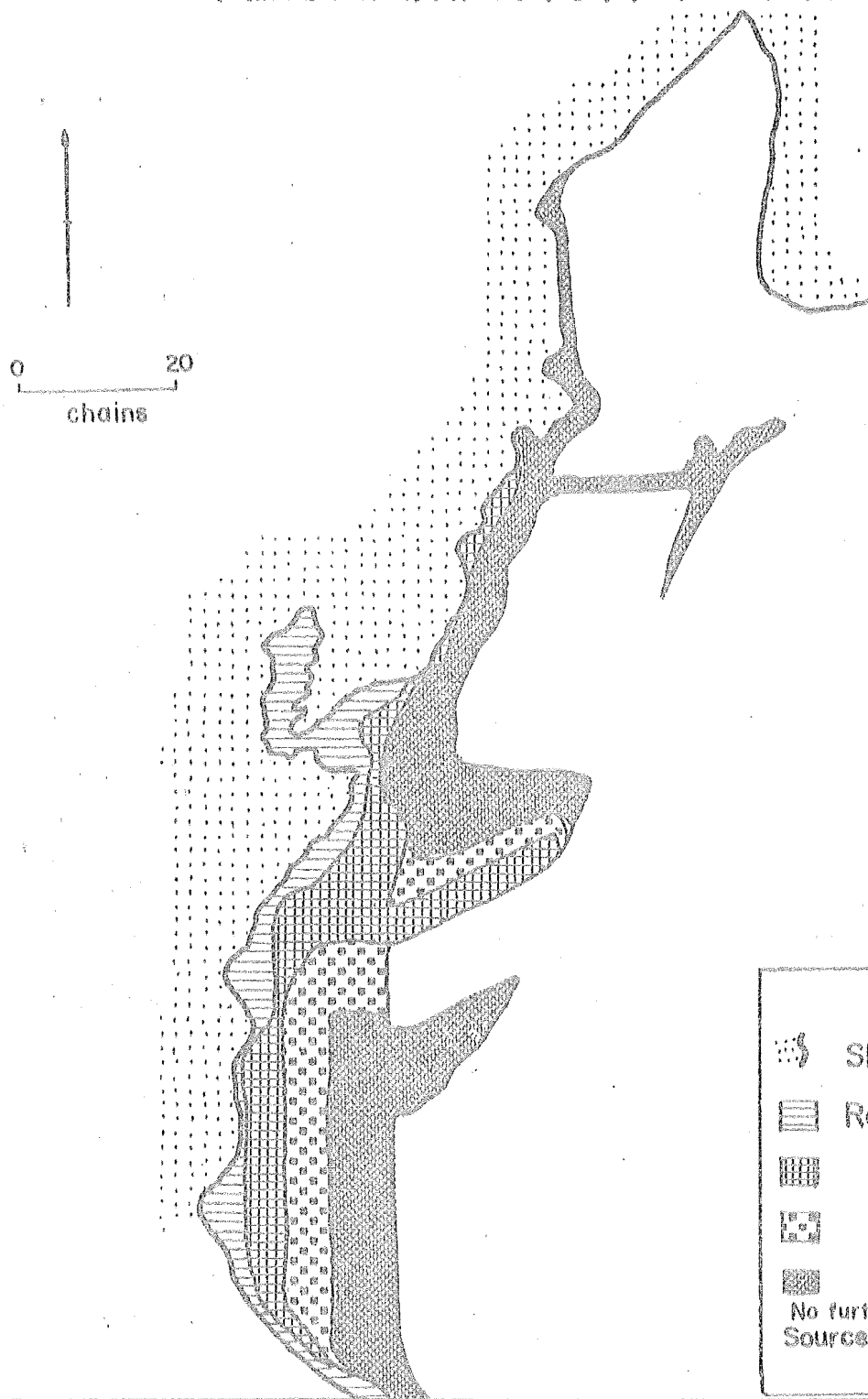
21. McLintock: op.cit., p.346.

District, and so remained until 1865. With the election of this Board some semblance of order came in the attention to streets and paths formerly dependent on voluntary labour. Information and complaints were solicited concerning footpaths, roads, and bridges. Even this Board was hampered by insufficient finance which prohibited the development of any systematic plan. Throughout Dunedin there is evidence of difficulties grappled within the gradual construction of its streets. The greatest transformations were the removal of Bell Hill and the reclamation of many acres of swampland and mud flat from the harbour. (Fig. 5). The magnitude of the task is better realised when it is considered that it was accomplished with horse and dray, pick and shovel. The ridges and gullies dissecting the town^{at} presented a special problem to the early road-makers. In several places small hills have had their summits removed and pushed into the gullies below. The steeper hills presented baffling problems, and even today some streets are only represented by flights of steps. Only a quarter of a mile from the Octagon is the vestige of a former deep gully, that ran where the Y.M.C.A. and Jewish Synagogue now stand.⁽²²⁾ High Street had a grade so steep that it was a considerable time before the upper portion could be use for carts.

In 1857, the Main Street was at least partially metalled, but hardly a month passed without some complaint that one or another side of the street was impassable. By 1858, when a

22. These can be located on the N.Z. Lands and Survey Dept: Map of Dunedin and Environs, 1959, scale: one inch to 25 chains, New Zealand.

DUNEDIN RECLAMATION 1861-1901



LEGEND

- Shoreline c. 1850
- Reclamation by 1861
- by 1875
- by 1883
- by 1890

No further reclamation until 1901.
Source: Harbour Board
Plans.

Fig.5.

narrow lane had been hacked through Bell Hill, there was about six miles of roading effectively metalled. A quarry on the west side of Maclaggan Street provided this material.

About this time a writer remarked on the evident symptoms of growth: "For some years the place had been almost stationary; now however, one who had been absent for a twelve month, cannot fail to perceive the changes. The place bids fair to be something like a town".⁽²³⁾ The growing prosperity of the town is shown in the rising value of building sites. Whereas a few years previously sections were leased for £10 a year, the values had now risen to between 20 and 40 shillings a foot of frontage, according to the locality. About half of the town quarter-acre sections had been sold. The more desirable of these had risen in value from the original 10 shillings, to £500 and even £1,000. *Source*

Several industries were already in operation including three flax mills, a candle manufactory, a photographic establishment, and two printing offices. With the establishment of steam-ship services in 1858, Dunedin was less isolated than formerly.

While the vigorous immigration policy of the late fifties brought in many more settlers, it caused a serious shortage of housing, only partly alleviated by the provision of barracks. The number and size of buildings had increased, but they were still mainly of wood with little individuality.

Various signs of steady development were apparent in the

23. Bathgate: op.cit., pp.41-2.

late fifties and early 1860s. Shops of a better type were replacing the earlier more primitive structures. Handsome villas were springing up within and without the town belt. Storekeepers and bakers delivered their goods. Bullock drays were giving place to the horse and cart.⁽²⁴⁾ The establishment of a foundry and steam mill were further pointers to progress. Despite this progress, on the eve of the gold rush, Dunedin was still a struggling village with streets unlit and mainly unmetalled. The local newspaper complained bitterly of mud in the streets and poor sewage.

The original town design rendered the development of the site more difficult. The attempt to force straight lines in conformity with the plan meant much costly excavating and digging. The "Witness" reported in August 1860:

"It is somewhat unfortunate that the plan of the town was made in the first instance on paper, and then applied to the ground. By this we have the advantage if it be so, of straight streets at right angles to each other, but the ground can only be brought into accordance by dint of much curving and excavating - a costly and clumsy process at best, and this in the case of some the so-called streets will probably never be carried to the extent of correcting them from their present condition of precipitous hills and gullies. Had the other plan been adopted, and the town in the first instance had been marked off on the ground leaving the paper plan to follow, we should have had a more natural and more beautiful town, having streets and terraces in higher parts formed to follow the contour of the ground, and we should have been able to take advantage to the utmost of the drainage."⁽²⁵⁾

In 1860 it was realised - too late - that many beautiful features had been destroyed, and that streets on the higher ground should

24. Bathgate: op.cit., p.55.

25. Otago Witness, 25th August, 1860.

have followed the contours instead of cutting across steep gullies and ascending difficult inclines. (26)

Gold and the Aftermath.

Gold brought great changes to Dunedin. Almost overnight the city was transformed from a village to a town, and within five years to a city. The great advances so changed Dunedin that those who had known the old town no longer recognised it. In December 1859, the population stood at 2,262, in December 1860, at 12,691, and by December 1861, had increased to 30,269. (Fig.4).

With as many as a thousand miners arriving daily, Dunedin soon became a chaos of tents and shanties crowded into right-of-ways and on to odd sections, public places, and reserves. Building speculators seized the opportunity to exploit a situation which the Town Board was powerless to control. "With the absence of effective regulations, tents, houses, and crazy tenements, jostled each other as if an inch of ground was worth a principedom". (27)

The worst abuse associated with this chaos was the leasing and subleasing of properties to owners of tents and shanties, who erected their hovels upon tiny subdivisions without regard to ventilation, air space, comfort, and decency. The sites of some buildings could only be described as fantastic - over ponds, and streams, or huddled along the filthy creeks and watercourses. (28) The overcrowding and general lack of sanitation was appalling.

26. Loc.cit.

27. The Otago Colonist, 1st November, 1861.

28. McLintock: op.cit., p.473.

In the more crowded parts of the town the smell was almost unbearable. An inadequate water supply added to the difficulties. Inevitably came epidemic after epidemic.

Building went on apace, and the town became a warren of inflammable buildings.⁽²⁹⁾ However, the business area of the Town was microscopic. "The usable portion of the town is very short, the whole business area is thrown into the narrow confined limits of a few streets running across and into one another from all directions."⁽³⁰⁾ Princes Street was for the most part lined with one-storied shops and houses built of rough sawn timber. Empty cases lined the sides of the street where cows, pigs, and fowls still roamed freely.

Under the impetus of the gold rush, Dunedin quickly became the financial centre of the colony and commerce assumed considerable importance. Warehouses (bonded and free stores), hotels, and accommodation houses became features of the Dunedin scene.

To the observer, Dunedin presented an incongruous picture; there was nothing that could be called a planned development. "From the streets one has to scramble up embankments to some shops, or to make perilous descents by means of steps rough cut out of the earth...".⁽³¹⁾

With the increased revenue from gold, the Provincial Council was able to embark on ambitious schemes for the construction of

29. R. Fulton: Medical Practice in the Early Days, Wellington, 1922, p. 135.

30. Ibid., pp. 134-5.

31. Loc. cit.

roads, railways, and bridges, as well as making better provision for public amenities. As private enterprise began to contribute to the transformation of the town, the streets became lined with substantial business premises. Many of the large mercantile houses of today were founded in this period.

In 1863, the streets were lit with gas for the first time; letters were delivered around the city; and the active cutting away of Bell Hill was commenced. The spoil from this work was dumped into the harbour and the first sale of land so reclaimed took place on March 10th, 1864.⁽³²⁾ This was a section in the vicinity of Bond and Crawford Streets. Further extensive reclamations were halted, while the various consulting engineers argued about the effect it would have on the tides in Otago Harbour.

¹⁸⁶⁴ A mass evacuation occurred at the end of 1863 when gold was discovered on the West Coast. By August 1864, the population had dropped to 15,037. (Fig. 4). The number of tents had decreased to 429, while the number of houses had increased to 2,879. The rush left Dunedin slightly bewildered, but after a momentary setback the city went ahead with road-ways, a new water supply, and telegraph communications. The succeeding years saw the establishment of some of the industries which are still amongst the most substantial in New Zealand.

Many were the malign comments about the "new iniquity", as the crowds of gold seekers were named. However, while the groups included some of an objectionable nature, as a body

32. Evening Star, 10th March, 1864.

they were men of pluck and enterprize: "They built, if we may so express it, on foundations to some extent already laid, but to them must be given the credit for making Dunedin what it is". (33)

A panoramic view of the city in 1865 shows that much of the land was already built on. However, this settlement was by no means contiguous. There was for example, no extensive housing in the South Dunedin - St. Kilda area.

Dunedin had been created a city early in 1865, and on July 21st the first mayor and councillors were elected. The exhibition held in Dunedin in this year, gave her the right to claim a commercial supremacy galling to her rivals. By the late sixties Dunedin was the foremost city in New Zealand, making good her claim to commercial and industrial supremacy, by erecting buildings whose quality reflected the prosperity of the decade. The Bank of New South Wales, the Atheneum, Wright Stephenson, and Scoular's first building, were all erected prior to 1870.

The gold rush had created unforeseen problems in housing and building construction, and this, with the lack of town-planning, caused a change which now had to be faced. Between the years 1863-1868, there occurred some of the most disastrous fires in the history of Dunedin - blazes which swept whole blocks, and cost thousands of pounds. As the whole town was composed of wooden buildings, closely packed together, a fire when it did occur was likely to sweep through several buildings. "It was not uncommon

33. A.Eccles: The First New Zealand Exhibition and Dunedin in 1865, Dunedin, 1925.

for people twenty or thirty houses distant from the actual fire, to start shifting their belongings".⁽³⁴⁾ These fires destroyed many of the wooden structures in the central business district. As many of the replacements were built of stone or brick, outbreaks were reduced.

Dunedin as a trade and distributing centre had established a supremacy based on gold but it continued to grow rapidly with the impact of Vogel's public works policy, and with rising wheat and wool prices. Dunedin, the provincial capital, was the subject of some remarks by Anthony Trollope when he visited New Zealand in 1872:

"Dunedin is a remarkably handsome town - and when its age is considered, a town which may be considered remarkable in everyway. The Main Street has no sign of newness about it. The houses are well built and the public buildings, banks, and churches are large commodious and ornamental".⁽³⁵⁾

The town had a population of 18,500 in 1871, covering much of the area within the Town-belt, and several outlying suburbs. However, factory industry was still small and scattered. Flour-mills, breweries, tanneries, boat-factories and foundries were all small in the area they occupied, in output, and in labour employed. Nevertheless, industry was soon to become important in Dunedin.

Dunedin in 1875.

In 1875, Dunedin stood between two worlds. As an intermediate point in an historical survey it is useful to consider

34. J.S.Little: A Century of Fires and Fire Brigades in Dunedin, Dunedin, 1948, p.40.

35. Anthony Trollope: Australia and New Zealand, London, 1873, Vol. 11, p.342.

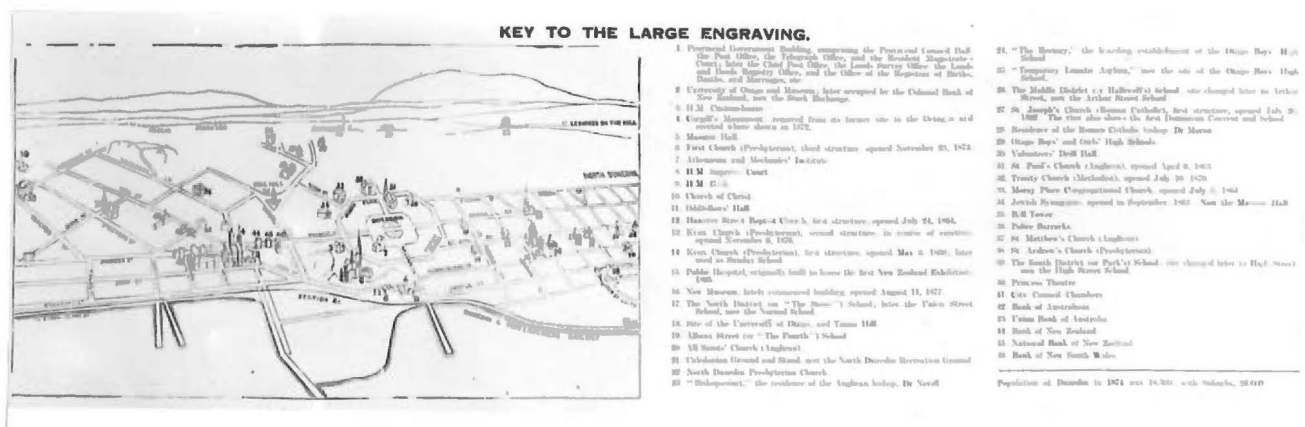
the city at this date. (Plate 1). In 1875 the abolition of the provinces ended the provincial era in Otago. The industrial age was dawning in Dunedin with an accompanying rapid growth of factories and foundries. The reason for this early development of large-scale industry is to be found in the late sixties. The province was then at the height of prosperity, and many industrial and commercial ventures were founded.

As we have noted, by 1875 the 26,000 or so people in the city had spread beyond the Town-Belt to occupy several of the recently subdivided townships.⁽³⁶⁾ Most of the originally planned streets had now been surveyed and formed, even if many were still unmetalled. An increase in reclamation had slightly extended the flat area along the foreshore. (Fig. 5). The constitution of the Dunedin Harbour Board in 1874 had brought a controlling body to the work of reclamation but little was accomplished before the close of the decade.

The Octagon and Exchange continued as the two main foci of the town. The main administration block and commercial area was to the south and seaward of the Octagon. The carters' yards, warehouses and bulk stores were along the waterfront, while the retail section of town occupied the area on either side of George and Princes Street. Certain residential areas had developed a character of their own. Houses varied from cottages in Stuart Street to the substantial mansions on Heriot Row. In spite of

36. "Township" was the name given to a block of land by the owner when he was about to subdivide. e.g. Township of Richmond Hill.

Plate 1 Dunedin in 1875: While possibly not accurate in every detail, this engraving gives an excellent picture of Dunedin within the Town Belt. The shore-line, the commercial area, and the warehouses along Crawford Street are easily located. The tall chimneys in the lower right of the plate show the industrial area. Some land was vacant, and several steep banks were still covered in bush.



DUNEDIN IN 1875.



the many fine residences and large public-buildings, Dunedin still presented a rather unkempt appearance, with many vacant sections, steep cuttings, and gravel quarries. Although a better water-supply was in operation by 1875, the streets, sewage and drainage all needed attention. While a frequent and extensive transport system was in operation, it lacked a central controlling authority. Dunedin in 1875 was the centre of government, education, and the judiciary of Otago, as well as the centre for the re-export of wool and grain from the interior.

Industrial Dunedin.

After 1875 industrial expansion continued, although the first impact of the depression, which was to plague the eighties, had been felt. However, brick-making, pottery and earthenware industries, paper-making, printing, bookbinding, and confectionery-making were all established in this period. During the seventies a great deal of railway construction and general public works was also carried out, and in the late years of this decade many substantial buildings were added to the city.

A great deal of subdivision of land outside the town belt took place in the seventies. Innumerable "townships" were put on the market in these years. While the 1881 map gives a good idea of the state of subdivision, it should not be mistaken as an indication of occupied land. (Fig. 6). Many of these sections were not occupied even in 1900-1.

The number of reports from consulting engineers from 1875 on, testifies to the fact that the city authorities were at last actively considering the problems of streets, sewage and water-

DUNEDIN 1881 THE STATE OF SUBDIVISION

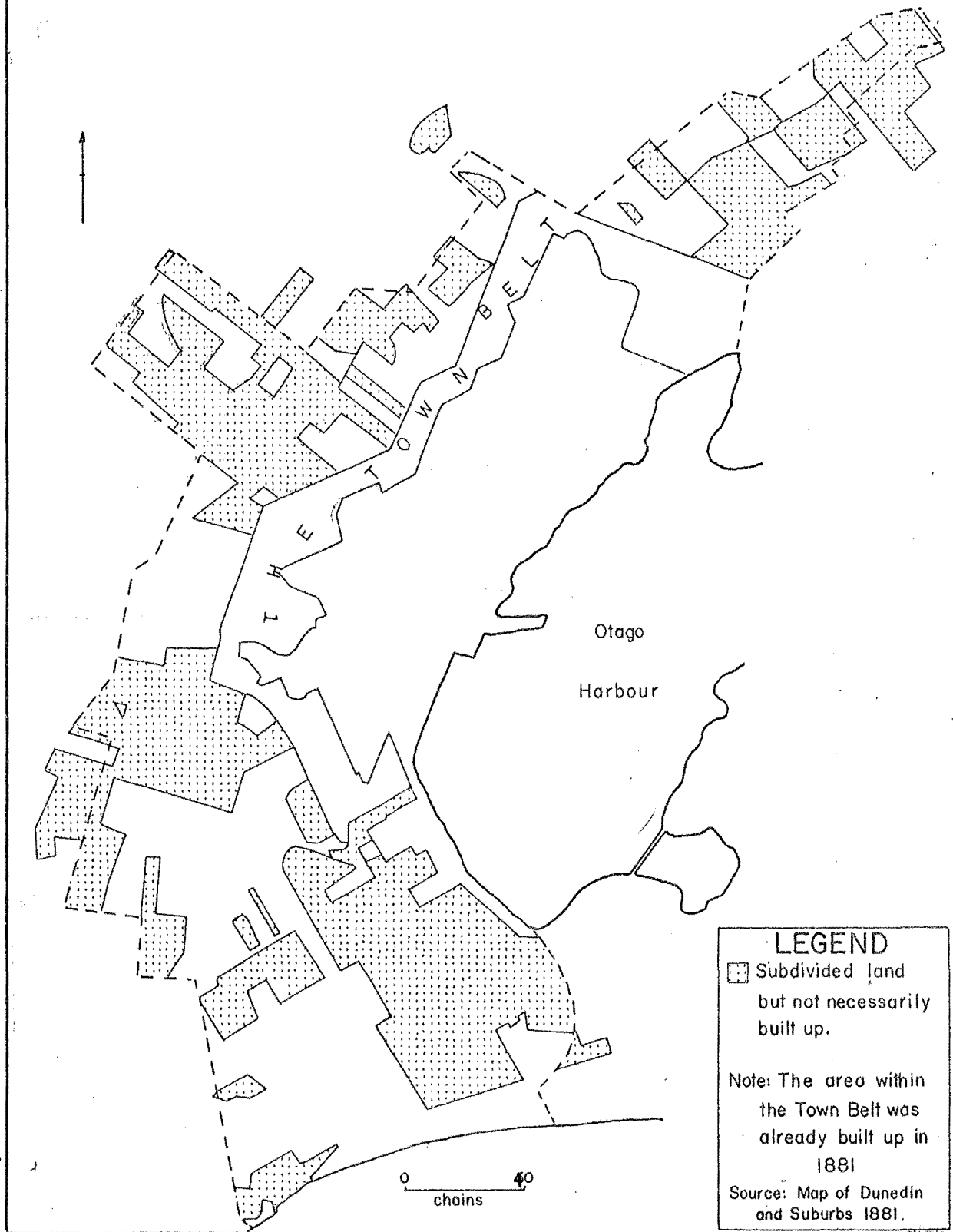


Fig. 6.

supply.⁽³⁷⁾ In 1875 a report stated: "our sewage poisons our houses, our streets are filthy, and our flat (the water front) in many places is a saturated mass of pollution."³⁸ Only parts of some eleven streets had sewers at this date. Several reports called for a scheme to cover the whole of Dunedin, but it seems that nothing was accomplished until after the turn of the century. A report on the works required to complete the city streets, under the headings of formation, kerbing, channelling and asphaltting, estimated the cost at £136,880.⁽³⁹⁾ From this report, the condition of Dunedin's streets can be assumed. It pointed out that the streets then requiring attention were on the hillsides, where improvements could be obtained only "at the cost of heavy cutting and consequent injury to properties".⁽⁴⁰⁾ One of the greatest difficulties was to obtain sufficient street metal to form the roads. A private water-supply company had also been promoted in 1864, but by 1874 the supply was inadequate. The company was taken over by the City Corporation, and eventually the Silverstream works was constructed in 1882. Similarly in 1882, a second gas-works was erected, as the first taken over in 1876 could not supply sufficient gas for the 380 lamps in the city in 1878.

37. There are several volumes of these in the Hocken Library, Dunedin.

38. G.W.Cole, Medical Officer of Health: Preliminary Sanitary Report of the City of Dunedin, Dunedin, 1875, p.8.

39. City of Dunedin: Report from the City Surveyor as to Permanent Formation and Drainage Works Required to Complete the City Improvements, Dunedin, 1878.

40. S.H.Mirams, City Surveyor: Report to the City Council, Dunedin, 1874, p.4.

The construction of the Dunedin Tramways in 1879, perhaps symbolizes the gap that separated Dunedin and the other centres as another decade opened. Dunedin was New Zealand's leader in wealth, in population, and in commercial pre-eminence. Dunedin in 1880, was the most industrialized town in New Zealand, a position emphasized by the Industrial Exhibition of 1881. The eighties were the great years of industrialization in Dunedin. However, it is important not to ignore the fact that this was a fluctuating period, when booms and depressions occurred almost from month to month. Despite the depression, a period of industrial growth continued through this decade, marked by the beginning of the Frozen Meat industry in 1882, the production of the first worsted in 1886 at the Roslyn Woollen Mills in the Kaikorai Valley and the manufacture of cement and steel in 1889. The small industrial exhibition of 1881, the larger industrial exhibition of 1885, and the New Zealand South Seas Exhibition of 1889-90 were notes of optimism in the years of depression. Depression or no, the Dunedin correspondent of the *Tuapeka Times* wrote in 1884: "The buildings and manufactories are superior to many colonial towns of twice its age and the class of goods is amazingly wide".⁽⁴¹⁾

Dunedin in the mid-1880's was still centred on the thoroughfares of Princes and George Street with its heart in the Exchange

41. Dunedin in 1884, Reports from the Dunedin Correspondent of the Tuapeka Times, 1884, Hocken Library, Dunedin.

area.⁽⁴²⁾ The main development of the city was still located south of the Octagon. Engineering shops, foundries, brewing works, and factories concerned with papermaking, fruit and wheat processing, boot and shoe manufacturing, coach building, agricultural implement-making, confectionery manufacture and candle and brush manufacture were only a few of the varied industries to be found in Dunedin at this time.⁽⁴³⁾ The great smoke-stacks arising from the city attested to her industrial activity and energy. In addition, industry had spread over the hill into Kaikorai Valley. Dunedin in the mid-1880's was still the leading industrial centre of New Zealand even if Auckland had captured the lead in population.⁽⁴⁴⁾ (Fig. 4).

Princes and George Streets were the main thoroughfares both commercially and architecturally. Many of the more substantial and imposing buildings which were to last into the twentieth century were erected in the 1880's. The suburbs had expanded considerably, and houses of varying architectural styles were to be found in them. A delightful mixture of trees and villa residences was appearing in some districts. Roslyn and Mornington had been connected to the city by a cable tramway since 1883. A railway and tramway extended to Ocean Beach, where there was a fine race-course at Forbury, while Caversham, with its trees and

42. Garran (Ed.): Picturesque Atlas of Australasia, Melbourne, 1886, Vol. 111, p.647.

43. Ibid., p. 651.

44. A Census of the Colony of New Zealand 1886, Wellington, 1886, pp. 8-9.

gardens, was the favourite residential area for merchants in the mid-1880's. (45)

Thus on the occasion of the 1889-90 Industrial Exhibition, the author of "Strangers Vade Mecum" could write of: "Dunedin, the largest best-built and most important commercial city in New Zealand". (46) Improvements had been carried out on the main streets although they were still muddy in winter because of the lack of metal. Public baths, gas, and a reasonable water supply were available.

The Decline of Dunedin.

The 1889-90 Exhibition was an undoubted success. Dunedin had good reason for the satisfaction that was expressed by the contemporary press. (47) Few, if any, realised amidst the congratulations and plaudits of the final ceremony that future generations might regard this as the climax of Dunedin's commercial supremacy. The people of Dunedin saw it as the beginning of an era of prosperity; but this southern dominance was ended by the opening up of the North Island lands for settlement with a resulting northward drift of population. Though slow at first, this drift rapidly gained momentum after the turn of the century. The commerce of Dunedin did not come to a halt after the 1889-90 Exhibition, but during the nineties she gradually

45. Garran: op.cit., p.653.

46. C.W.White: Stranger's Vade Mecum, or South Island Guide, Dunedin, 1889, pp.33-34.

47. Otago Daily Times, 19th April, 1890.

lost her commercial supremacy. The end of the depression and the development of the gold dredging industry of Central Otago were of little avail. She continued to expand in population, industry, and commerce, but with less vigour.

Dunedin in the early 1890's was a long narrow town, traversing the flat and the lower slopes of hills encircling the harbour. Roslyn was well settled by artisans in substantial dwellings and St. Clair promised "to become a fashionable watering place".⁽⁴⁸⁾ There was a scattering of houses and shops in South Dunedin and St. Kilda. The manufacturing areas were south of the Exchange, which continued as the centre of the commercial interests. Shops with wide window displays containing many varieties of goods were a feature of the Princes and George Street areas.

Streets were much improved, especially the many asphalted footpaths. Twopenny wrote: "The town is well planned, well lighted and extremely well kept".⁽⁴⁹⁾ The survey of streets in Dunedin in 1901 does not give evidence of such a spectacular development but it is an indication that the streets were receiving attention. Drainage and sewage, however, had been sadly neglected. The suburbs were especially overlooked. However, the twentieth century was to be reached before they were to receive attention.

The reclamation of the area from Crawford to Cumberland

48. Cassell and Coy., Ltd: Pictorial New Zealand, London, 1895, p. 189.

49. Ibid., p.190.

Streets was begun in the late 1870's and was completed in 1884. This work was greatly affected by the depressed eighties. By 1890 the reclaimed area had been further extended to Wharf Street. (Fig. 5). In the north, reclamation work had been started on the area behind the cement works. However, this work was not finished until the early years of the twentieth century. The material for this development on the flat came from the extensive dredging operations to keep a channel open in the harbour.

There is no doubt that the dredging industry and its associated industries dominated the Otago scene from 1890 down to the early twentieth century. "It provided a much needed stimulus to the general growth of the province"⁽⁵⁰⁾ at a time when its supremacy was slipping away. Like the earlier gold rush it affected all phases of life. Local industries flourished, foundries worked day and night, engineering firms could hardly supply the great demand for dredges.⁽⁵¹⁾ It was, however, but a passing phase. Even by the end of 1901 the number of dredges in Central Otago had begun to decline.

Trade was also moving to the north. In the eighties Dunedin and Port Chalmers were the great export centres for the south, with crowded wharves loading wool, wheat, and meat. By the turn of the century both Auckland and Wellington had displaced Dunedin as importing centres.⁽⁵²⁾ It was not unnatural that as the northern settlements grew their ports should grow also. Auckland,

50. McIntock: op.cit., p. 675.

51. New Zealand Official Year Book, Wellington, 1899, p.509.

52. Statistics of the Colony of New Zealand 1901, Wellington, 1902, p.291.

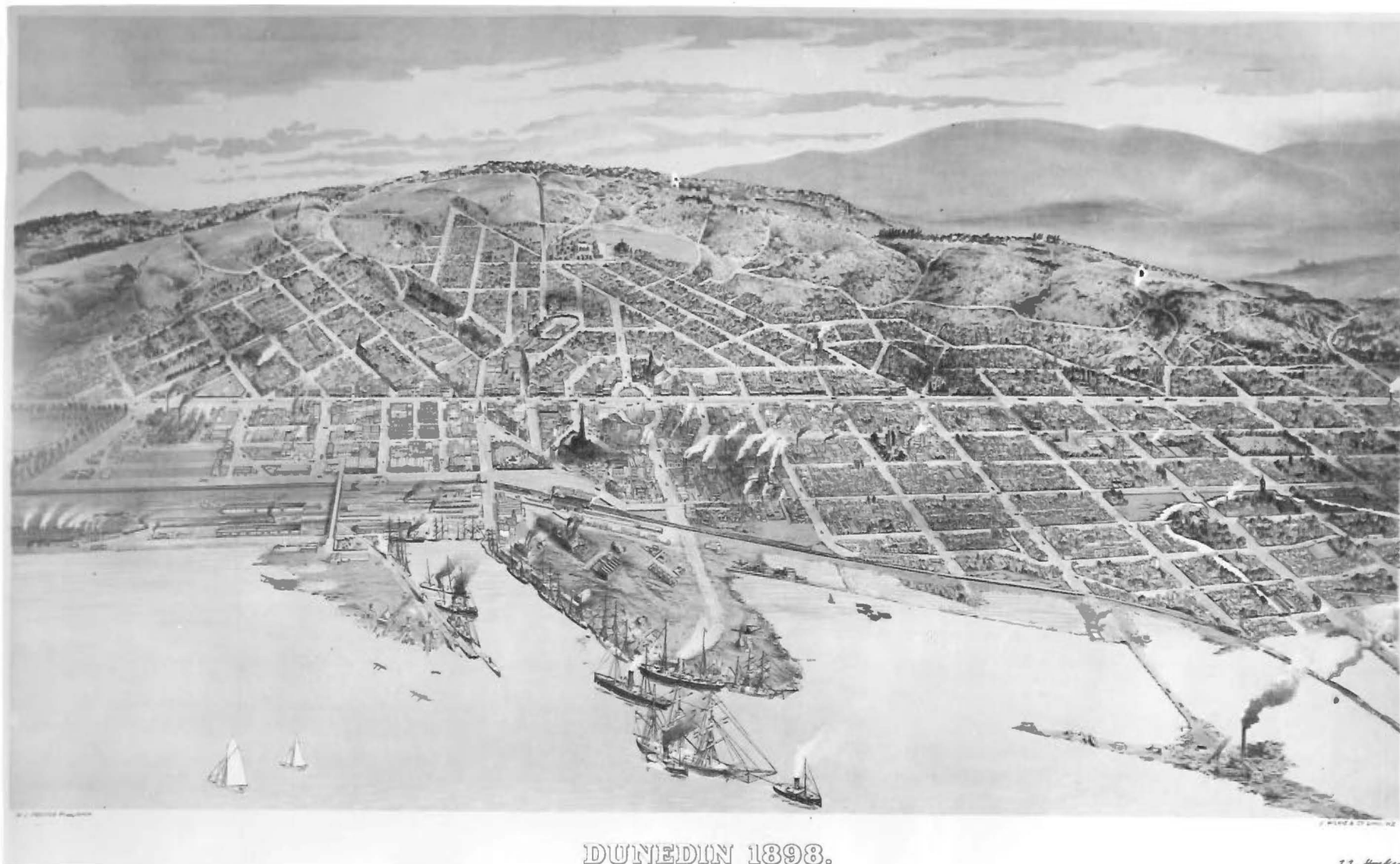
close to the Pacific lands and with the benefit of trading vessels using the Panama Canal, rapidly went ahead.

In 1898 Dunedin celebrated the Jubilee of 50 years of settlement and progress in city and province. (Plate 11). Another industrial exhibition was a feature of the celebrations. Certainly there were as many industries as in 1889-90 but the expansion in this decade had not been comparable with the other centres. While the other centres raced ahead in the new century, Dunedin seems to have moved into a quiet backwater.

Dunedin had passed through her greatest period of expansion and had reached a stable position which was to continue in the twentieth century. It is Dunedin at the close of this great era, that the present dissertation covers in more detail.

Plate 11 Dunedin in 1898: More accurate than the engraving, this lithograph shows Dunedin within the Town Belt at the time of the Jubilee only three years before 1901. Some of the hilltop suburbs are also depicted. Reclamation had considerably extended the foreshore. The commercial, and industrial areas, indicated by the smoke-stacks occupy large areas in the foreground of the plate. Since 1875, streets had been considerably levelled and cleared. The lithograph also shows the artist's conception of the busy "Port of Dunedin."

Photograph: Hocken Library



CHAPTER 111

DUNEDIN IN 1901 - THE TOWN AND ITS POPULATION.

The Form Of The Town.

Dunedin in 1901 was an elongated settlement, winding along the base and slopes of the low hills at the head of Otago Harbour. In this extensive Urban Region (Fig. 7)⁽¹⁾ there were 47,400 people.⁽²⁾ The elongation was related to the site, for the greatest area of flat land had been reclaimed at the foot of the Kaikorai Ridge.⁽³⁾ The hilly nature of the site was one of the distinguishing features of Dunedin, and added to its charm for many visitors. It was

"a country town, half field, half city. Hardly a window but it gazes far across the gleaming harbour, or else over green hillsides. No house, but from it ten minutes walk reaches the meadow land, or the steep hill slopes.....".⁽⁴⁾

This idyllic picture however, takes no account of the slums such as in South Dunedin or Walker Street.

The view from Signal Hill was of an extensive settled area, extending from North-East Valley to St. Kilda, and from Mornington and Roslyn on the higher hill slopes, down to the wharves on the reclaimed flat. Beyond the built-up area were farms, clusters of houses, and here and there an outlying settlement. A half mile from the wharf was the focus of all activity - the

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1. Refer to Introduction where this Region is defined.
 2. The Population of the Urban Region was determined by the Dept. of the Census, Wellington.
 3. This Title has been given for convenience to the hillslopes between Highgate and the Harbour.
 4. Otago Daily Times, 3rd March, 1900.

DUNEDIN 1901 GENERALISED LAND USE

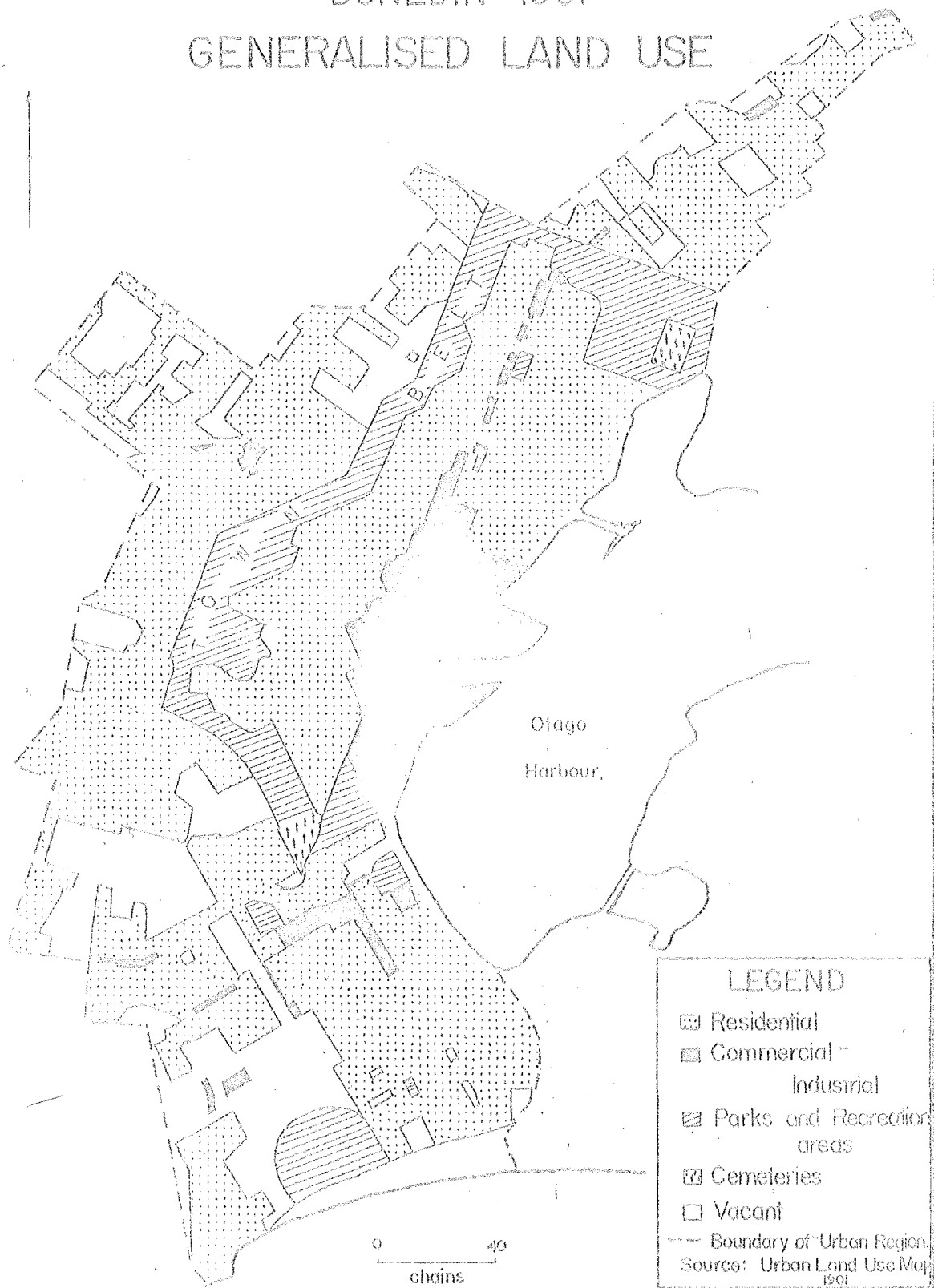


Fig. 7.

central business district. Here were the tallest buildings and the grandest displays of architecture. Surrounding this core, and stretching up the hill slopes, were the residences - row after row of wooden and brick villas and cottages. Through these the Town Belt cut a semicircular green band. Intermittent groups of taller buildings signified small shopping areas, or isolated factories. Threading through this agglomeration, and binding it together, were the lines of the horse-drawn trams and cable-cars. This was the general form of the city.

There are two main elements in any general survey of a city - the morphological or plan and building structure, and the demographical or population structure.⁽⁵⁾ The former is probably of greater importance, for once city streets are laid out, and lined with buildings, the pattern in which city living must go on has been set.⁽⁶⁾

The form of the city streets is composed of three inter-related aspects - pattern, width, and gradient. The original rectilinear form established by Kettle and his surveyors was preserved when the survey was extended to South Dunedin and the North-East Valley. While most streets were wide enough for two horse cabs to pass, earlier subdivisions carried out by private speculators provided lanes that were wide enough for only one vehicle. These narrow lanes were most common in South Dunedin

5. H.M.Mayer and C.F.Kohn: Readings in Urban Geography, Chicago, 1959, p.15.

6. P.James and C.Jones: American Geography Inventory and Prospect, Syracuse, 1954, p.159.

although there were a number in the city itself. In the fifty years of settlement that had elapsed, much progress in the lowering of street levels and adjusting of gradients had been carried out. However, as the streets in no way followed the contours, gradients were often unduly steep. Several streets ended in a series of steps, others finished at the edge of steep sided gullies, and yet others, on the higher slopes, had not been formed at all. Altogether, only two-thirds of the streets had been formed, kerbed, and metalled, although metalling was often a fiction rather than a reality. One of the greatest problems was the filthy condition of the streets. In an editorial, the muddy state of the footpaths and crossings was denounced as "...a positive disgrace to the city corporation."⁽⁷⁾ Although wooden crossings were provided to conduct the pedestrian across the mire, the boards were often covered with inches of mud in wet weather. While suburban streets (outside the Town Belt) were generally in a better condition than the city streets, both areas suffered from the poor supply of road metal. The great defect was that the streets were concave or flat, instead of having a crown in the middle.⁽⁸⁾ Wheeled horse traffic quickly rutted the surface, and with no camber water either lay in stagnant pools, or flowed down the gradient, washing metal, mud, and horse droppings into heaps.

7. Otago Daily Times, 11th July, 1900.

8. Otago Daily Times, 4th Sept., 1899.

Often described as the finest-built city in New Zealand,⁽⁹⁾ Dunedin was well-known for her substantial buildings. The central core in Princes Street, between the Exchange and the Octagon, included many imposing brick and stone commercial and public buildings of three and four stories. Hotels, insurance offices, and banks vied with each other in architectural splendour. The housing area which surrounded the central core varied in density from place to place. In the areas of highest density the homes were situated on small sections only a few feet from the road. This condition was most prevalent in South Dunedin, parts of Caversham, and North-East Valley. Outside of these districts the density of houses was highly variable. Within the Town Belt there were few vacant sections, but in the suburbs several large blocks of land had not been subdivided. Other blocks, although surveyed into sections, were not yet built on. The largest of these enclaves within the continuously built up area were found near the periphery, as is to be expected.

The Population of Dunedin.

The 47,400 people in the Urban Region comprised 93 percent of the total population in the Dunedin census area.⁽¹⁰⁾ The map showing the census area, the built-up area, and the Urban Region, indicates the relationship of these elements. (Fig. 8).

9. Thos. Cook & Son: New Zealand as a Tourist and Health Resort, Dunedin, 1902, pp. 75-77.

10. Appendix 11.

DUNEDIN 1901

RELATION OF THE URBAN REGION TO THE CENSUS DIVISIONS AND URBAN SETTLEMENT

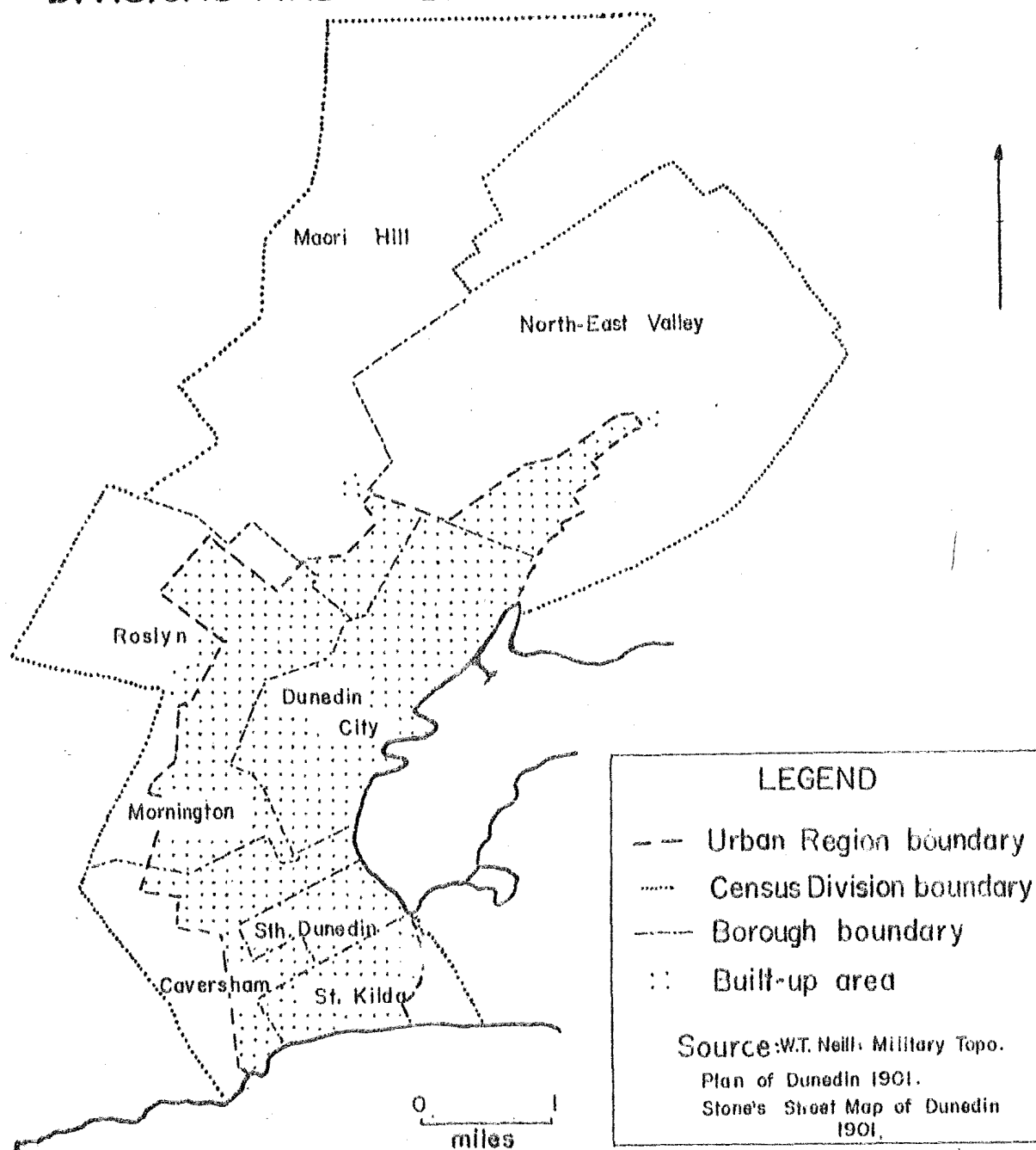


Fig. 8.

Although Dunedin was still ahead of Wellington in total population, the rate of increase of 14.2 percent over the previous 10 years was lower than any of the other main centres.⁽¹¹⁾ Death rates in all major cities in New Zealand were low when compared with other British Colonies, but infant mortality was noticeably higher in Dunedin than in the other New Zealand centres.

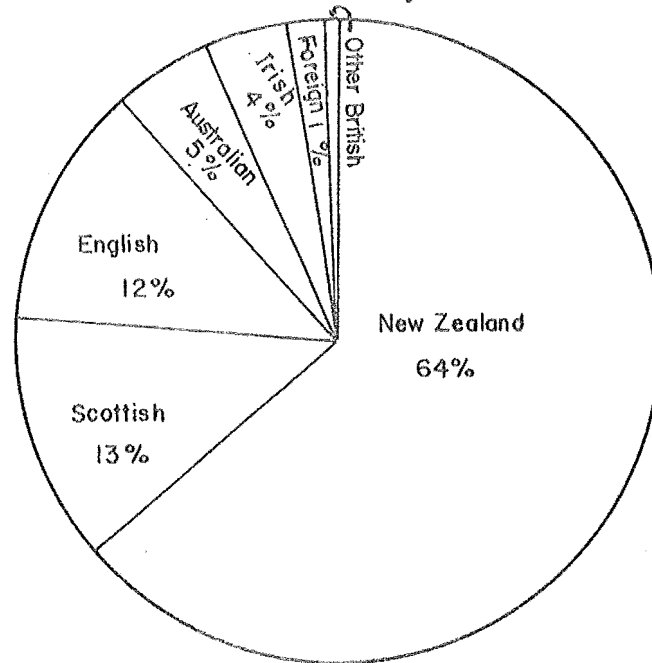
Dunedin was not a cosmopolitan city. Fully 98 percent of the people were of British stock. However, only 62 percent had been born in New Zealand. (Fig. 9). The four largest groups of immigrants were Scottish, English, Irish and Australian. Non-British immigrants made up only 2 percent of the total population of Dunedin, a sizeable proportion of which were Chinese. There were no 'racial areas' as such, but there was a tendency for certain immigrants to be found in particular localities. Roslyn and Maori Hill were favoured by Scottish settlers, and in South Dunedin and Caversham there were large numbers of Irish immigrants.⁽¹²⁾ This regional difference was in part a reflection of the prosperity of the two classes of settlers, for Roslyn and Maori Hill were higher class residential areas. The Chinese had congregated in several areas well known and avoided by Europeans. Walker Street, MacLaggan Street and the fringe of the central business district were the areas favoured by these people.

11. Auckland's rate of increase was 31 percent.

12. A Census of the Colony of N.Z. 1901, Wellington, 1902, p.30.

DUNEDIN 1901 POPULATION STRUCTURE

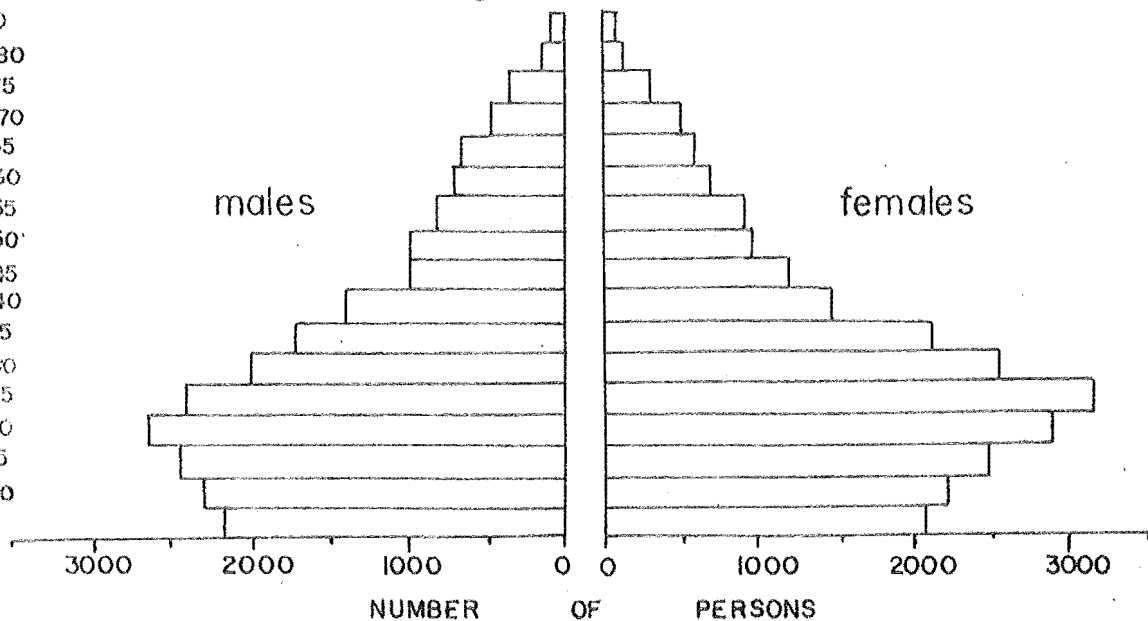
Nationality



Age and Sex

AGES

80
76-80
71-75
66-70
61-65
56-60
51-55
46-50
41-45
36-40
31-35
26-30
21-25
16-20
11-15
6-10
0-5



SOURCE: N.Z. CENSUS 1901

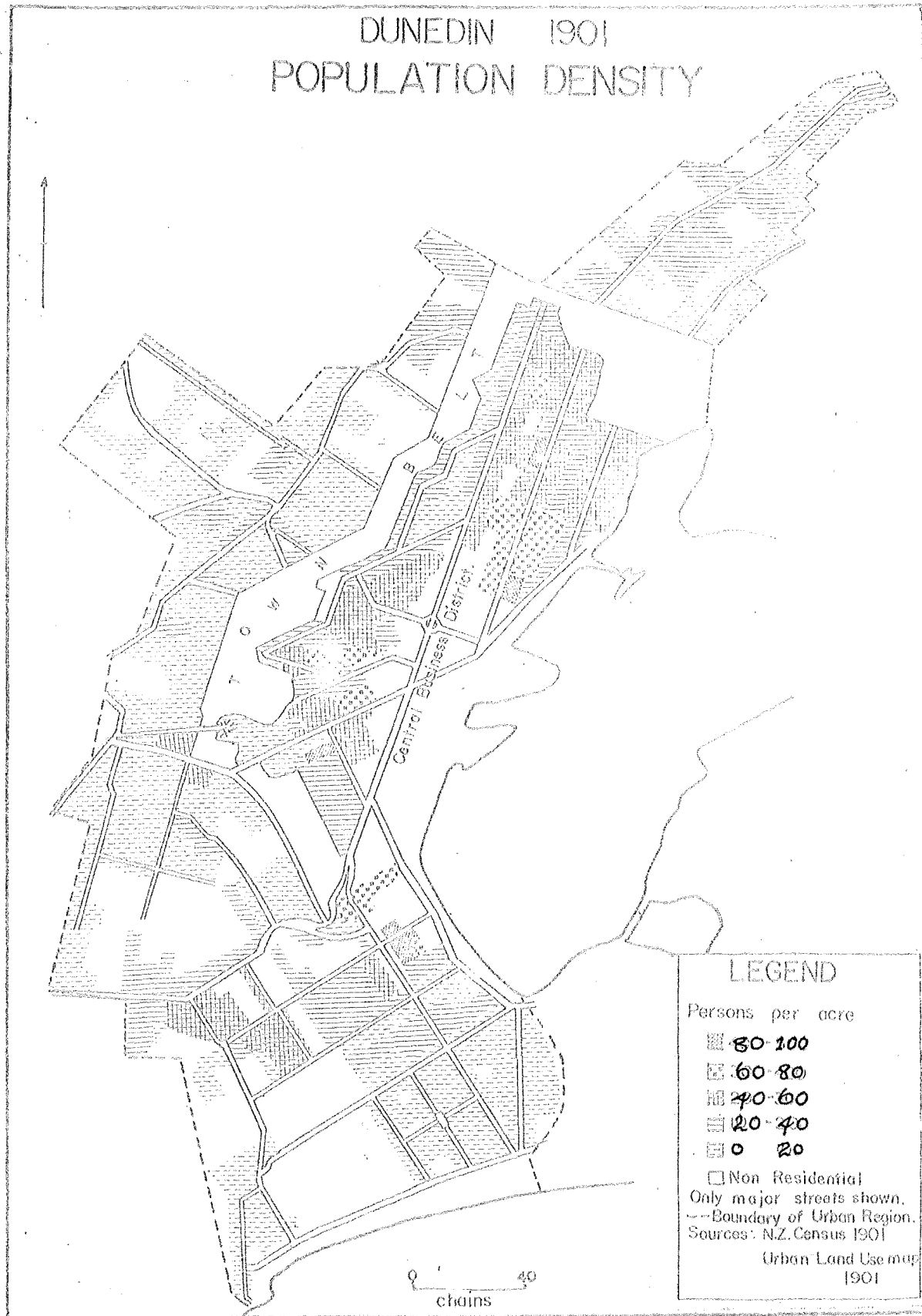
Fig. 9.

Like all New Zealand settlements in 1901, the population of Dunedin was very youthful. Sixty percent of the total population was under 30 years, and 40 percent was under 20 years of age. As with other urban populations also, there was a greater number of females than males, especially between the ages of 16 and 35 years. (Fig.9). However, in Dunedin the number of females was even larger than usual.⁽¹³⁾ This predominance can be seen as a response to the greater social maturity, wider entertainment, and greater economic opportunities of city life. The concentration of clothing factories in Dunedin gave more extensive opportunities for female employment than in the other centres. The bulge in the pyramid of working age population was a normal response to the far greater range of jobs offered in the city.

Population densities varied considerably but were characteristically higher along routeways and near the central core. (Fig.10). There were high densities around the central business district, near the commercial cores of South Dunedin and Caversham, and around the old cores of Mornington, Maori Hill, and Roslyn. The reclaimed area of North Dunedin had high population densities, as had Main South Road. Densities were lower on the steep hill slopes of the City and lowest in the boroughs outside the Town Belt particularly near the Urban boundary.

13. A Census of the Colony of N.Z. 1901, Wellington, 1902, p.15.

DUNEDIN 1901 POPULATION DENSITY



LEGEND

Persons per acre

■ 80-100

▨ 60-80

▩ 40-60

▤ 20-40

◻ 0-20

□ Non Residential

Only major streets shown.
--- Boundary of Urban Region.
Sources: N.Z. Census 1901

Urban Land Use map
1901

Fig.10.

As will be noted later in more detail, there is a distinct correlation between population density, and housing quality in the Dunedin of 1901. Where the densities were high, houses and sections were small. It did not follow that because houses were small they were necessarily of poor quality, but this was often the case.

This interaction of the form of the town and its inhabitants, the varying densities and age groupings of the population, the street pattern and building arrangements, form a background to the consideration of the general functions of the town in the next chapter.

CHAPTER 1V

THE GENERAL FUNCTIONS OF DUNEDIN 1901.

Dunedin in 1901 was primarily an industrial town. (Fig.11). Manufacturing employed more than twice as many workers as commerce, which was the second largest function measured by employment numbers. As in any city, a large number of workers were employed in the various forms of personal service. Approximately the same proportions were concerned with the transport function, and in government and administration.⁽¹⁾ As well as being the centre for these economic activities, Dunedin was also the social and educational focus of the whole Otago province. These various functions which are to be considered in general in this chapter will also be dealt with in more detail in their sub-regional settings.

Industrial Functions.

It does not seem that industrial expansion in Dunedin had been initiated by any particular superiority in local raw materials. Rather it was an outgrowth of the prosperity of the town after the gold rushes in the early 1860's.⁽²⁾ The financial slump, which had for so long delayed industrial development, lifted in 1895 and industry in Dunedin had forged ahead but not as forcefully as in Auckland or Christchurch. The dredging boom in 1900 only temporarily increased employment in the heavy engineering industries. Even by 1901 the boom was falling off.⁽³⁾ New

1. Appendix 111.

2. See Chapter 11, p.21

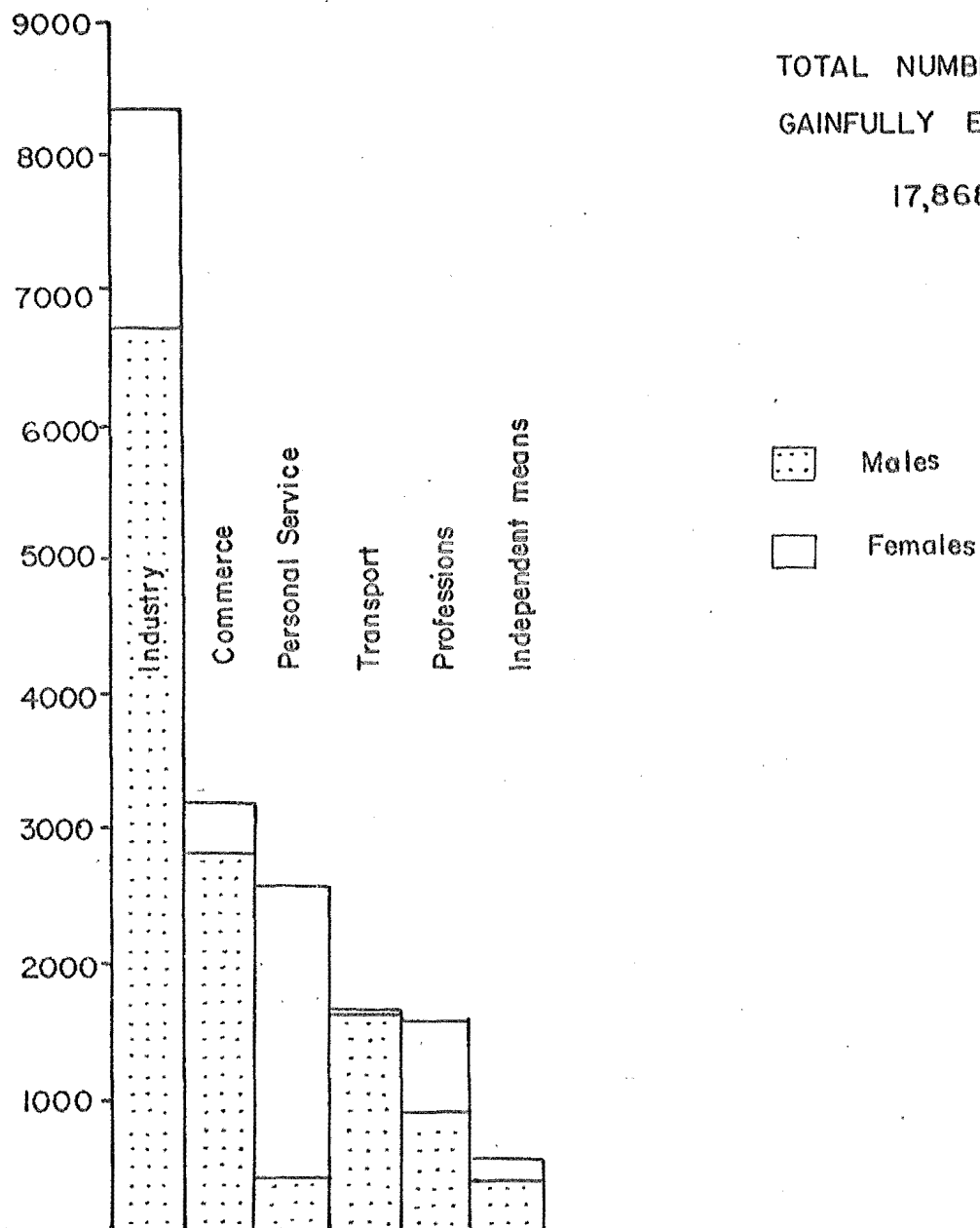
3. Report of the Dept. of Labour: Appendices to Journals, House of Representatives, (H/11), Wellington, 1901, p.8.

DUNEDIN 1901

OCCUPATION STRUCTURE

No. of

Workers.



Source: A Census of the Colony of N.Z. 1901.

Fig. 11.

factories were being established but the 19 founded during 1900 compares very unfavourably with the 39 established in Auckland during that year.⁽⁴⁾

In 1901, 8,353 of the gainfully employed population in the Dunedin Urban Region were engaged in manufacturing industries.⁽⁵⁾ These workers were employed in 604 factories with an average of some 15 hands to a factory. However, the number of workers varied considerably from establishments run by a single person to a few large units which employed over 200 workers. Very generally three size groups can be distinguished: the very largest factories and workrooms employed over 80 workers; the medium sized factories employed between 30 and 60; and the small factories employed under 10.

The structure of industry in Dunedin in 1901 was characterised by three important features. First, many of the industries were already well established by 1901, having been founded at least as early as the great industrial boom of the 1880's.⁽⁶⁾ Second, clothing and engineering establishments employed over 50 percent of all workers. And third, Dunedin's factories were producing for New Zealand wide markets as well as for the Urban Region, which was in contrast with industry in other centres that was more specifically geared to provincial needs.

The greatest number of workers in Dunedin were engaged in the engineering and iron trades. (Fig.12). These industries

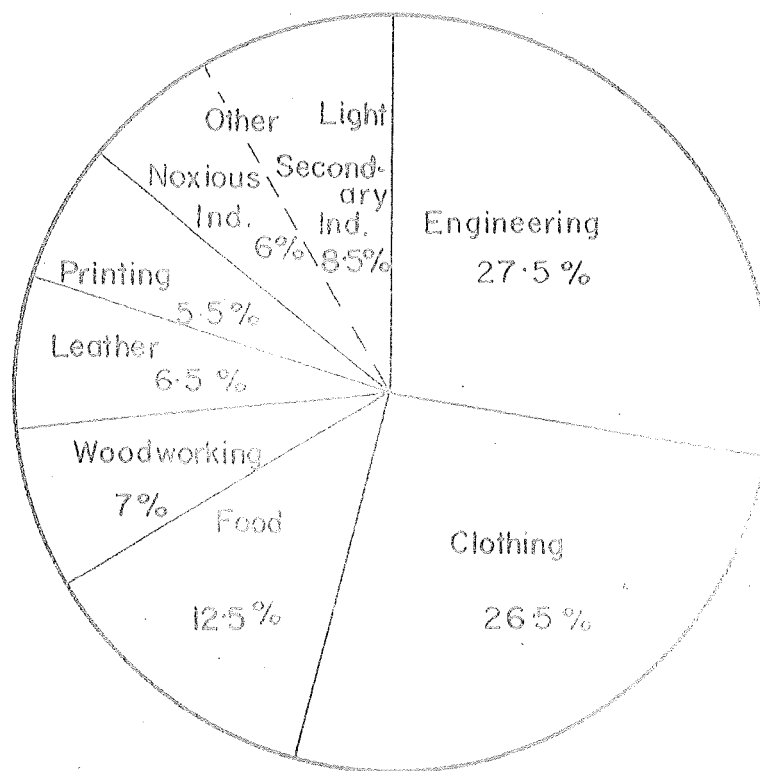
4. Ibid., p.1V.

5. Appendix 1V.

6. As a result many of New Zealand's industries had their head offices in Dunedin.

DUNEDIN 1901

INDUSTRIAL EMPLOYMENT STRUCTURE



TOTAL NUMBER OF WORKERS IN INDUSTRY 8353

Source: Rept. of Dept. of Labour, A.J.H.R., H/II, 1901.

Fig. 12.

employed almost entirely male staffs. Moulders, boilermakers, fitters, turners, and engineering blacksmiths made up 63 percent of the 2,297 engineers and general iron workers in Dunedin in 1901.⁽⁷⁾ Makers of agricultural implements, general blacksmiths and coachbuilders accounted for only 15 percent of the total workers in the engineering and iron trades, but these were extremely important branches of the industry. The heavy locomotive works at Hillside, South Dunedin, employed 425 men, 18 percent of the total workers in engineering. This was by far the largest industrial plant in Dunedin.⁽⁸⁾ For that matter most engineering factories were large, each employing more than 50 men. A few of the very large firms, such as A. & T. Burt, Coussins & Black, Reid and Grey, and Joseph Sparrows, employed over 100 men.⁽⁹⁾ These firms and their products were well-known all over the colony. Cooking-ranges, agricultural machinery, boilers, pumps, and heavy mining machinery (including dredges) were some of the products for which these firms were known nationally. The products were manufactured from imported "pig-iron". The foundries also supplied national demands. Mining machinery was sent to gold fields in Central Otago and on the West Coast, as well as to the North Island gold mining centres.

It was usual for the larger engineering firms to have a separate warehouse, as well as a storage yard and factory.

7. Report of the Dept. of Labour; op. cit., pp.36-42.

8. Loc.cit.

9. The Cyclopedia Co Ltd: The Cyclopedia of New Zealand, Christchurch, 1905, Vol.4, pp. 321-324.

However, some firms combined these functions into one building. In the front of such properties were the offices and display rooms; at the back was the factory. Some specialization had developed by 1901, and a few engineering firms produced only one product. Shacklock's, for example, manufactured only cooking ranges; Joseph Garside, and Metheuen & Son specialized in lead-pipe manufacture. These specializations reflect the increasing size of the factories and the growing demand for quality products. There were almost as many workers in the clothing trade as in the engineering industries (Fig.12) in spite of the fact that two large woollen mills were situated outside the Urban Region at Roslyn and Mosgiel.⁽¹⁰⁾ However, the employment structure of the clothing trade was quite different. The trade employed predominantly women who made up 80 percent of the workers.

Of the 2,226 employees engaged in the clothing industry 27 percent were dressmakers and milliners, 26 percent were employed in general apparel manufacture as cutters and machinists, 18 percent were tailors, 13 percent were employed as hosiery knitters, and seven percent made shirts. The remainder was employed in making such specialist items as hats, caps and umbrellas.⁽¹¹⁾ A continual shortage of female labour in Dunedin at the turn of the century meant that a considerable amount of overtime was worked in the clothing trade.⁽¹²⁾

10. These factories are discussed in more detail in Chapter VI.

11. Report of the Dept. of Labour: loc. cit.,

12. Ibid., p. ix.

Located mainly in the central business district, the clothing factories varied greatly in size. While the largest factories, those of Ross and Glendenning, Hallenstein Brothers, and the New Zealand Clothing factory employed up to 300 workers,⁽¹³⁾ many small workrooms had no more than 20 employees in full-time work. Several medium to large workrooms employed from 60 to 80 girls.⁽¹⁴⁾ Some large buildings of three or more stories were used solely for the manufacture of clothing, while smaller units were confined to one floor in a building, or the backroom of a small retail clothing shop. Although larger units had steam power, smaller workrooms found it more economical to depend on hand power for most of the work.⁽¹⁵⁾ The machinery was modern only in the newest workrooms. In most factories it had been in use for at least 20 years, having been installed during the industrial boom of the 1880's.

There was a New Zealand wide market for various articles of clothing made in Dunedin. The famous Roslyn rugs and Mosgiel tweeds were also sent to Australia and the United Kingdom. It was the manufacture of wearing apparel, however, which was most strongly established. By 1901, factories had become increasingly specialized. Several concentrated on shirt-making and three factories made hats and caps. Tailoring was carried out in small workrooms, and dressmaking was a part-time or full-time occupation for some 317 women who worked in various parts of the town.

13. The Cyclopedia Co. Ltd: op.cit., p. 307.

14. Ibid., pp.307-308.

15. Loc. cit.

Only 12 percent of those employed in manufacturing industries were engaged in the food trade. (Fig. 12). Within this industry there was a striking contrast between those units which employed 60 to 70 workers (the large confectionery and biscuit factories such as Hudson's) and the smallest bakeries operated by the owner and one assistant. Brewing and aerated-water industries employed only half the number of workers as the confectionery factories. Gavin's, one of the largest brewing firms in 1901, had only 30 employees.⁽¹⁶⁾ Bread-baking for the local market was carried out in well-equipped bake-houses, and also at the back of small pastry shops. The larger bakeries had fleets of carts to deliver their bread, but the small shops required the customers to call. Five factories were also engaged in canning and preserving meat, and others in making jam and preserves, and butter and cheese. Tea-packing and blending, coffee-grinding and sauce and pickle manufacture were also carried out but only for the local market. In fact, apart from some of the products from brewing and confectionery making, the food industry as a whole was oriented primarily to supply the Dunedin market. While several flour-mills in the Urban Region catered for the needs of most bakers and confectioners, some flour was brought in from the nearby farming regions. These areas also supplied many of the other raw materials for the food industry, including meat and fruit.

16. Ibid., p.292.

The leather, timber, and printing industries employed approximately the same percentages of industrial workers. (Fig.12). The term leather industry was almost synonymous with boot-making, for 84 percent of all leather workers were engaged in some aspect of footwear manufacture.⁽¹⁷⁾ There were six large factories employing more than 30 workers each.⁽¹⁸⁾ Many factories, however, employed less than five workers and some "bootmakers" were in business on their own account. Most of the work was done by hand, although clicking, punching, and cutting were carried out by gas-driven machinery. Other leather industries, including the manufacture of saddles, harnesses, and portmanteaus, served a market extending beyond the Urban Region. While the number employed in the various aspects of the timber trade totalled almost 600, George Clark, the leading builder, employed only 12 men.⁽¹⁹⁾ The individual joinery and furniture factories also had few workers. Haywards one of the largest, employed only 22 workers.⁽²⁰⁾ The furniture factory was often associated with a warehouse, where the products were displayed to buyers. Haywards and Scoullars both had display-rooms attached to their factories. The printing and publishing industries included book-binders, stationers and printers. Many of the units were very small, employing only three or four workers.⁽²¹⁾ However, there were about six firms that employed much larger staffs. They were

17. Report of the Dept. of Labour: Loc.cit.

18. J.Stone and Co: Otago and Southland Directory 1902, Dunedin, 1901, p.718.

19. The Cyclopedia Co. Ltd: op. cit., p.2994

20. Ibid., p.312.

21. Ibid., pp.356-357.

responsible for printing and publishing books as well as making stationery. Five daily newspapers, a weekly, and several intermittently published papers were printed at the offices of the Otago Daily Times and the Evening Star. Much of the paper for printing came from the papermill in the Leith Valley, less than three miles away. Finely embossed papers of higher quality, however, were imported.

The remaining industries in Dunedin in 1901 may be divided into two groups: heavy noxious establishments; and other light secondary industries. (Fig.12). The former included cement and chemical manufacture, fellmongery and tanning, gas-making, and plumbing, and employed 99 percent male labour. Their factories were nearly always on the edge of the Urban Region. Only the cement works produced for a non-local market. The other lighter industrial units varied from those producing rope, twine, and soap, to much smaller concerns which included gun-smithing, photography, mat and rug manufacture, and wax-vesta making.

The turn of the century was a period of change for industry in Dunedin. Many of the old hand powered machines were being superceded by steam and gas plants; and establishments were increasing in size. Yet Dunedin no longer held an invincible lead in industry over the other cities. The newer industries of Auckland were capturing some of the markets once held by Dunedin.

Industry dominated the employment structure of Dunedin in 1901. It was in fact at the heart of Dunedin's existence and created many positions in the commercial, professional, and transport functions of the city.

Commercial Functions.

While Dunedin was still important as a commercial centre, she had been surpassed in the value of her export and import trade by Auckland, Wellington, and Christchurch.⁽²²⁾ However, as the President of the Chamber of Commerce pointed out: "Dunedin has for the purpose of relieving the parent houses in Dunedin, established branches elsewhere which are now competing with Dunedin. This all adds to the prosperity of the colony".⁽²³⁾ The imports passing through the port of Dunedin⁽²⁴⁾ reflected the needs of the Urban Region and its hinterland. The largest items were industrial raw materials, timber and general merchandise (including sugar, luxury foods, apparel, acids, spices, and spirits). Gold, frozen meat, wool and grain were prominent among the exports. While gold to the value of £541,520 was exported, wool exported was only worth £284,000. Frozen meat, grain and manufactured goods made up another £258,958. It is significant that Dunedin exported more woollen manufactured goods than any other city, which reflects her importance as a centre of the clothing industry.⁽²⁵⁾ Ninety percent of Dunedin's exports went to two countries - Australia and the United Kingdom (Fig.13). The only other countries to receive a sizeable proportion of the exports were the U.S.A. and Natal. The imports to Dunedin were

22. Wellington, £4,990,970; Auckland, £4,946,258; Christchurch, £4,561,656; Dunedin, £3,667,061; Statistics of the Colony of N.Z. 1901, Wellington, 1903, pp. 248-251.

23. Dunedin Chamber of Commerce: Annual Report, Dunedin, 1900.

24. Appendix V.

25. The New Zealand Gazette, 1901, Vol. 1, p.1044, Vol. 2, pp. 1544 and 2122, 1902, Vol. 1, p.272.

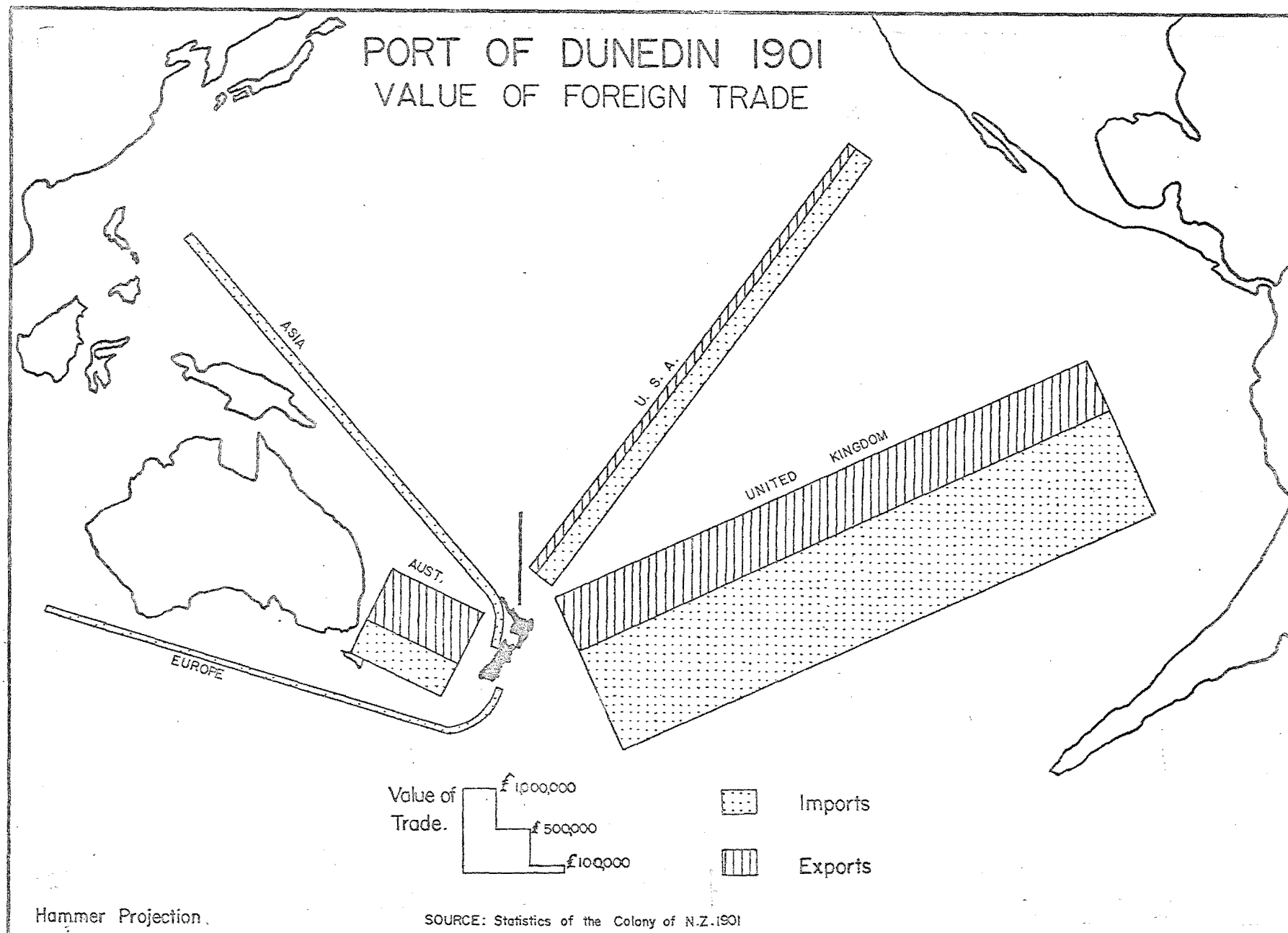


Fig. 13.

drawn from a much wider range of states. The United Kingdom and Australia supplied the largest percentage, but Fiji, Ceylon, Bengal, Singapore, France, Germany, Belgium, and the U.S.A. all supplied considerable amounts of goods. (26)

The 3,193 workers in the various commercial establishments of the city were minutely subdivided by the 1901 Census into 41 suborders. (27) Unfortunately, the census does not divide the workers into those engaged in retail, wholesale, or office activities. For this reason a discussion of the commercial functions of Dunedin has been based on an assessment of the commercial establishments derived from Stone's 1901 Street and Trade Directory. (28)

Altogether there were 1,378 commercial establishments in the Urban Region in 1901. These ranged from the small corner store, and often smaller commercial office, to the large retail stores and warehouses. The relative importance of the several types of commercial activity is shown in Figure 14. (29)

Retailing had the largest number of establishments. There were 530 establishments divided amongst food stores, clothing shops and 'other' retail stores. Retail food services (with 331 establishments) was easily the largest. Included in this group were grocers, fruiterers, greengrocers, confectioners, and 'stores'. The latter group were to be found mainly outside the

26. Statistics of the Colony of N.Z. 1901, Wellington, 1903, pp. 248-251.

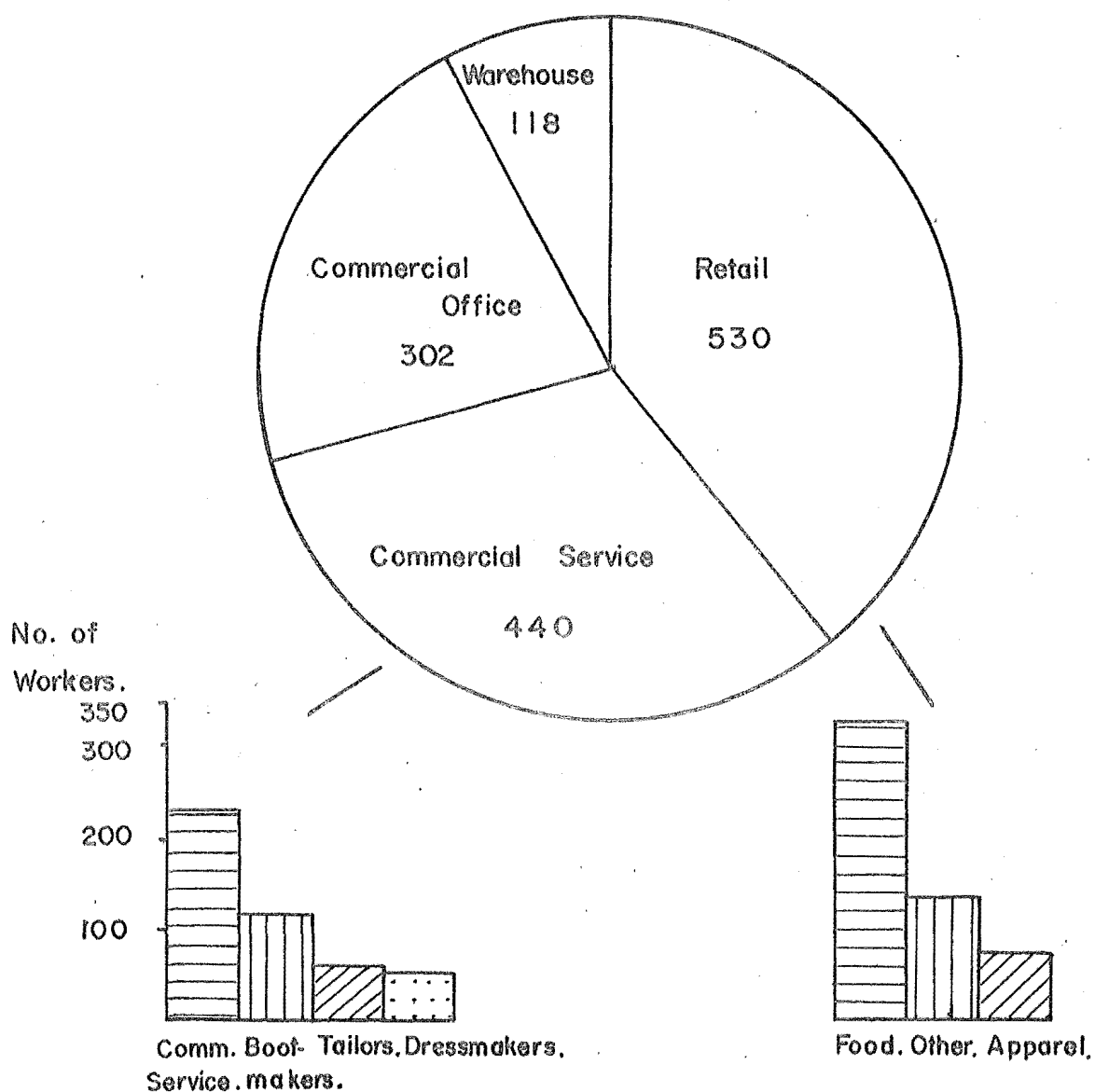
27. A Census of the Colony of N.Z. 1901, Wellington, 1902.

28. J. Stone and Co: op. cit.

29. These figures were calculated by counting the number of shops, commercial offices, warehouses, and commercial service establishments in Stone's Directory, Loc. cit.

DUNEDIN 1901

COMMERCIAL ESTABLISHMENTS IN THE URBAN REGION



Source: J Stone: Otago and Southland Directory 1902.

Fig. 14.

central business district in the suburban shopping cores or generally scattered through the residential area. They were the general all purpose shop stocking general hardware as well as food. The grocers, fruiterers and 'stores' were almost invariably owner-operated. Even the largest were family businesses with only one or two assistants.⁽³⁰⁾ The miscellaneous retail shops included chemists, jewellers, florists, stationers, booksellers and news-agents. These shops, like the foodstores, were operated by the owner with only occasionally an assistant. Bagley's, the largest firm, had three shops each with an assistant.⁽³¹⁾ There were only 62 retail clothing stores in Dunedin in 1901. The largest of these firms were engaged in manufacturing as well as retailing clothing. Even so, Brown Ewings had 100 in the general drapery department.⁽³²⁾ The smaller drapery shops, like the grocers and fruiterers, had only one or two assistants.

Commercial service also accounted for a large number of establishments. Included in this category were 114 bootmakers, 39 dressmakers and 49 tailors. (They have been accorded a separate classification on the land use map as they stand somewhere between true commercial service activities and manufacturing). Hotels, coffee palaces, tearooms, laundries, saddlers, pawnbrokers and hairdressers made up 238 of the commercial service establishments. Altogether commercial service accounted for one-third of all commercial units. Firms that can be classed as commercial

30. The Cyclopedia Co. Ltd: op.cit., p. 359.

31. Ibid., p.250.

32. Ibid., p.301.

offices, numbered over 300. This class included all people dealing in property and finance in some form or another. Banks and insurance companies employed the largest staffs. The Bank of New Zealand had 45 employees and the National Bank a similarly large staff.⁽³³⁾ Sharebrokers, accountants, financiers, and general agents in most cases only had an office in a larger building. Thus, in the Colonial bank building there were some 12 commercial offices.⁽³⁴⁾ Some of the accountants were in partnership but many practised alone.

The smallest group of commercial establishments were the warehouses. There were only 118 of these, each employing up to 30 workers.⁽³⁵⁾ Many of the bonded and free stores and general warehouses were two or three stories in height and covered an acre or more. As has already been pointed out, the warehouse was often only part of a retail shop or a factory.⁽³⁶⁾ Here produce was sorted, packed and re-packed both for export and for local sale. The warehouses dealt with most of the material passing through the port. Briscoe's, one of the larger, but by no means the largest warehouse, had seven travellers on the staff to serve the South Island, as well as the normal warehousing staff.⁽³⁷⁾

There were approximately 2,600 workers employed in the various personal services. In contrast with the general employment structure 90 percent of the workers in personal services were women. This is more readily understood when we realise that in

33. Ibid., p.257.

34. J.Stone and Co: op.cit., p.306.

35. The Cyclopedia Co. Ltd: op.cit., p.348.

36. Ibid., p.328.

37. Loc. cit.

1901 households had daily help and the larger homes maintained a staff of servants. Apart from work in a clothing factory there was very little other employment available to the young women of the day. However, even in 1901 many were turning to factory work, rather than to the more menial tasks of housekeeping.

Although commerce had less than half the workers that were in industry, commerce was still a vital part of the functions of Dunedin in 1901. The industries depended on commerce to market their manufactured goods and import raw materials.

Transport Functions.

The port, and local transport services were closely linked with the commercial functions of the city. F. W. Morgan has written: "Ports are essentially gateways, through which goods are shipped from land to sea, and vice versa." (38)

Ideally, a port, apart from needing sufficient space for its operations, should have an easy entrance, deep water, a small tidal range, and a climate that will not hamper port operations at any time of the year. (39) Dunedin possessed only the last two of these requirements. It had always been a constant struggle to maintain a sufficient depth of water and thus keep up regular shipping contacts with the rest of the colony and overseas. Yet a good harbour was essential if Dunedin were to remain commercially important. The President of the Dunedin Chamber of Commerce spoke of this matter in his annual report in 1900: "The dredging

38. F.W.Morgan: Ports and Harbours, London, 1951, p.13.

39. A.H.Mayer and C.F.Kohn: Readings in Urban Geography, Chicago, 1959, p.365.

of the channel has gone on simultaneously with the building of the new sheds, widening of wharves and reclamation of reserves with material dredged from the steamer's basin."⁽⁴⁰⁾ By 1901 vessels drawing 21 feet of water could safely use the channel. Several steam cranes were being installed and the number of storage sheds increased. The number of ships entering and leaving the port in 1901 was not high by comparison with the other main ports of New Zealand.⁽⁴¹⁾ While 507 vessels entered the port on coastal trading voyages, only 48 foreign vessels visited Dunedin. Of all the vessels that entered the port, only 12 percent were sailing ships. (Fig.15).

The local transport facilities, both for passengers and freight, helped to make the city an integrated whole. (Fig.16). Horse-drawn vehicles predominated. All of them except for the horse trams, were extremely adaptable, capable of travelling almost anywhere, though their speed did not exceed five or six miles per hour.

The focus of the passenger transport system was the Exchange area. This was crowded with trams and people at rush hours in the morning and evening. The cable cars and horse drawn trams were the most popular forms of passenger transport. The first electric section, The Roslyn - Maori Hill extension, was opened in October, 1900.⁽⁴²⁾ This was the first electric tram-line in New Zealand. Complete conversion of all lines for electric

40. Dunedin Chamber of Commerce: op.cit.

41. Statistics of the Colony of N.Z. 1901, Wellington, 1902, p.291.

42. Otago Daily Times, 30th October, 1900.

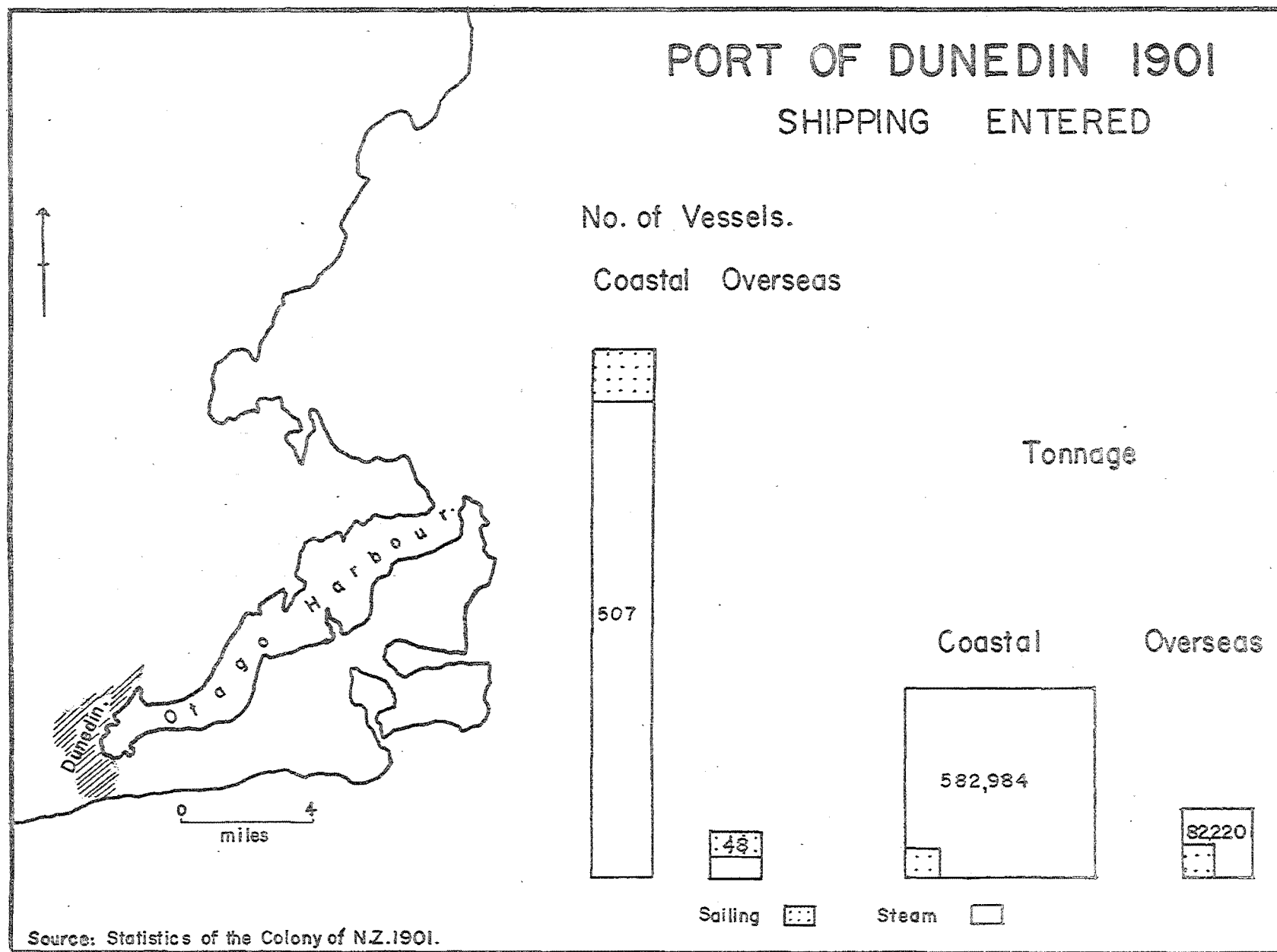


Fig. 15

DUNEDIN 1901 PASSENGER TRANSPORT ROUTES

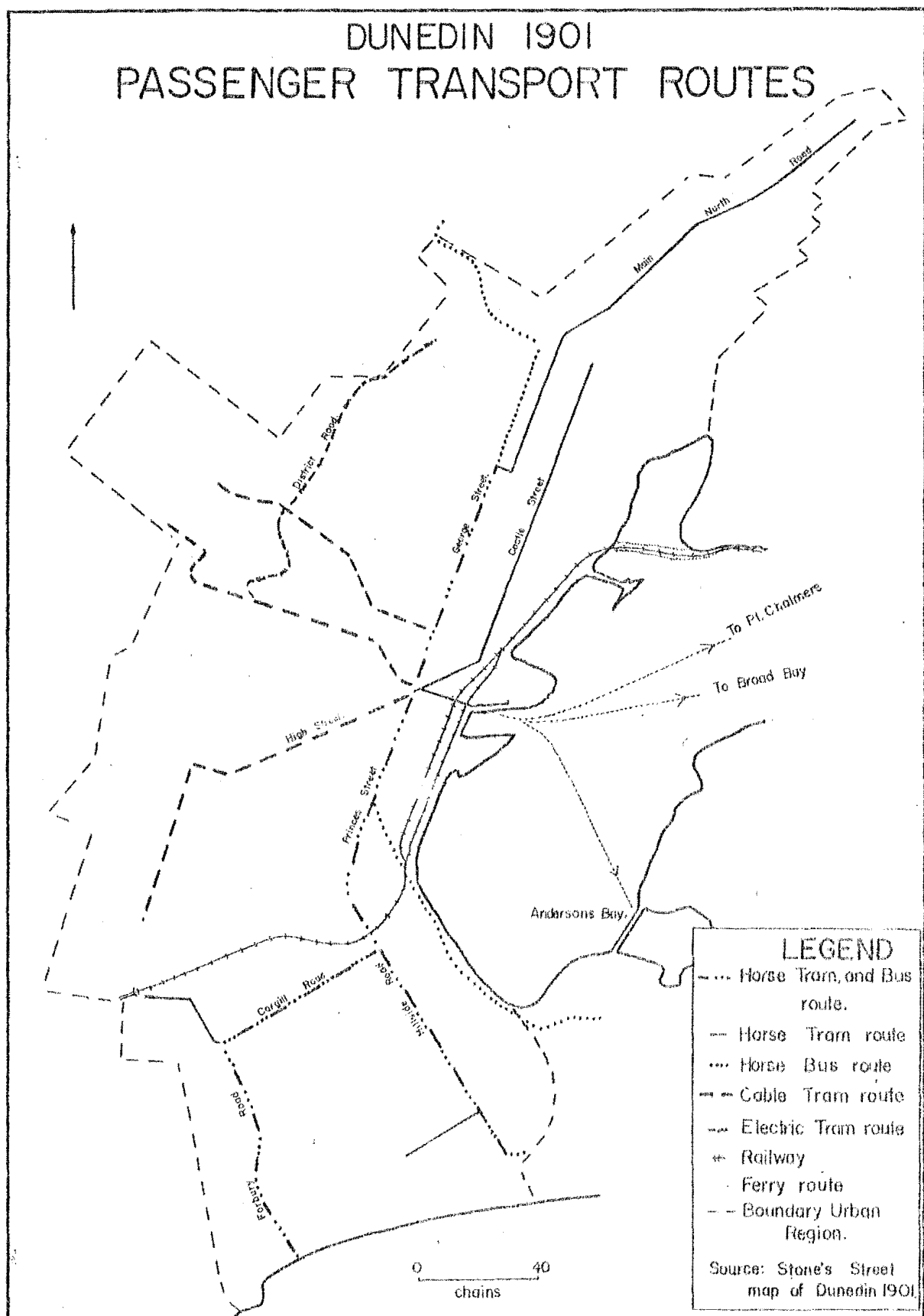


Fig. 16.

traction had been planned, and for this purpose the tramways were purchased by the City Corporation in 1899.⁽⁴³⁾ Dunedin at the turn of the century was thus in a stage of transition with her transport systems.

An inventory of the public tramways at that date showed that there were $16\frac{1}{2}$ miles of track, and 40 passenger cars.⁽⁴⁴⁾ This inventory did not include the three separate cable tramways and their extensions, owned by two private companies. Horse trams tranversed the flat from Ocean Beach to North-East Valley, and threecable tramways climbed the steep hillslopes to Mornington, Roslyn, and Maori Hill. (Fig.16). One of the more important reasons for the introduction of electric traction was the great difficulty in buying sufficient feed for some 300 horses, and maintaining the large stables that were required. It was an expensive system and at best unwieldy. However, a frequent service was provided. Cars ran every few minutes to the Botanical Gardens and South Dunedin, but less frequently to Normanby in the North-East Valley, to St. Kilda, and to St. Clair (Fig. 17). The cable tramways averaged 70 return trips a day, though the extensions ran less often. The horse-bus service was not as extensive, nor as frequent as the tram service. The buses travelled mainly to settlements outside the Urban boundary where there was no connecting tram service. Horse-buses ran infrequently to St. Clair, to Ocean Beach, and to Nichols Creek

43. Conversion to electric traction carried out in 1903.

44. The Jubilee of Civic Government 1865-1915, Dunedin, 1915, p.42.

DUNEDIN 1901

WEEKDAY VOLUME OF TRAM AND CABLE CAR SERVICES

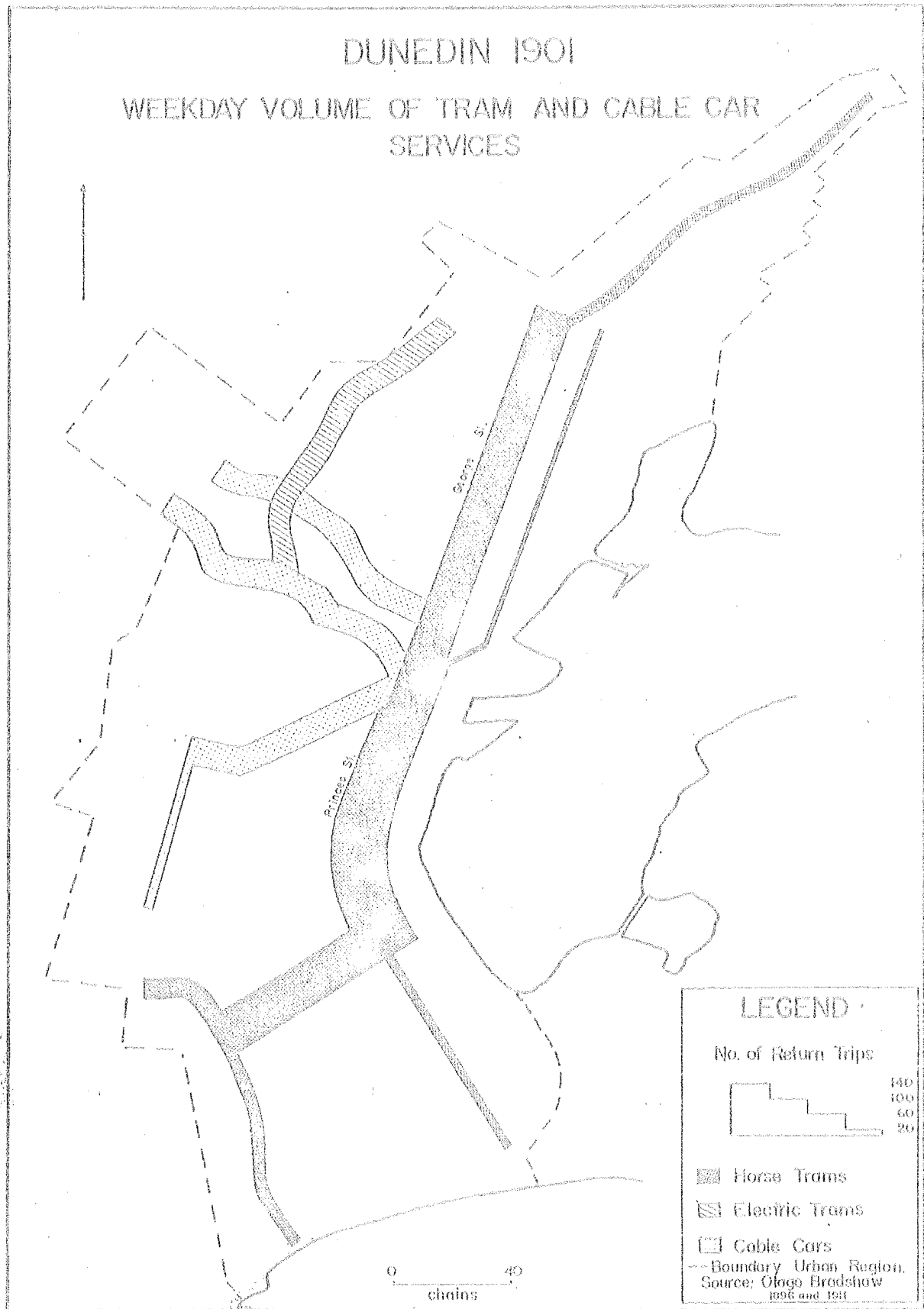


Fig. 17

up the Leith Valley. The main service of 18 return trips a day was to Anderson's Bay. Horse-buses also connected daily with ~~Brood~~^o Bay, Portobello and Highcliff. They were not confined to a system of rails and so routes could be altered at will. Many people also walked to work in Dunedin, but few cycled because of the steep hills.

The horse-cab was an important feature of the streets of Dunedin. It was most expensive - 1/6d a mile - and quite beyond the means of all but the wealthy. Certainly, they were not often patronised by the workingman. Many of the "gentry" had their own cabs and traps, although the hire-cabs always did a brisk business with tourists, and on wet days.

Large firms maintained their own fleet of carts for delivery and general transport, but on the whole this business was done by carters, or by firms specifically engaged in the freight-moving business.

The railways were more important as an inter-urban link than as an intra-urban system. They were also concerned with the carriage of freight rather than with passengers. However, they were responsible for connections with some outlying settlements, and with the outskirts of the Urban Region. The volume of daily passenger trains shows the most important passenger connections were to Caversham, Burnside and Green Island in the south, and to Port Chalmers in the north (Fig. 18). However, the frequency of the service did not approach that of Auckland.⁽⁴⁵⁾

45. The busiest line in Dunedin had only 16 trains a day on it, while the busiest in Auckland had 47. Railways Statement: Appendices to Journals, House of Representatives, (D.2), Wellington, 1901, p.10.

There were only four stations in the Urban Region, the main station being close to the wharves though a little way from the heart of the central business district.

Although the railways shifted the great bulk of the heavy goods, and provided a lifeline through the city, they were not flexible enough to be used for the extremely short hauls within the Urban Region. Their function was rather to provide the indispensable link between City and tributary region. The tonnages moved show how much the local industries depended on the railways for the transport of both finished products and raw materials (Fig. 18). While the greater volume of goods passed through the Dunedin central yards, a surprising tonnage of minerals was also moved at the suburban stations. Fifteen thousand tons of minerals were railed yearly into Pelichet Bay to supply the cement works situated there.⁽⁴⁶⁾ As Dunedin was the focus of a pastoral hinterland, livestock and wool were important items moved at several stations. The large livestock numbers passing through Burnside, reflects the location there of the City Corporation abattoirs, and the saleyards.

Passenger ferries, connected the city with Portobello and Andersons Bay. Small steamers, carrying general merchandise, travelled to the Taieri and Clutha farming regions by way of the Taieri and Clutha Rivers.

The limitations of the local transport facilities were speed, carrying capacity, and general efficiency. As horse traffic was so slow, people could not live more than two or three miles from

46. Loc.cit.

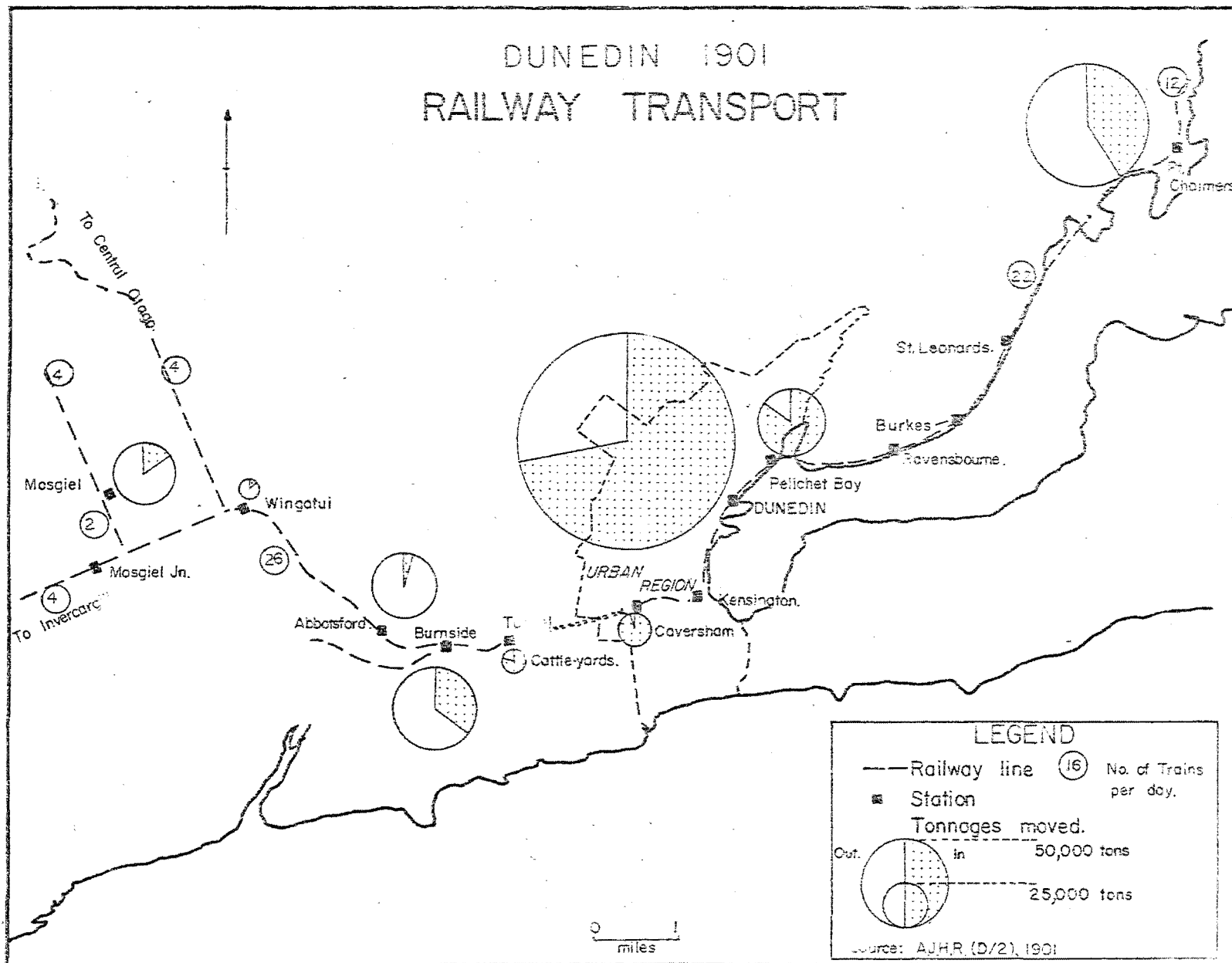


Fig. 18.

the central area without spending excessive time in travelling. Although, (as has been noted in Chapter 111) Dunedin already covered an extensive area, the slowness of transport tended to restrain further expansion of the city. Transport inefficiency also restricted industry mainly to the wharf area and to South Dunedin, where transport was most reliable.

Despite these limitations the transport services were responsible for maintaining contacts with the rest of New Zealand and for binding Dunedin into an integrated unit.

Professional Functions.

The professional functions of Dunedin in 1901 covered a wide range of activities including local and general government, defence, law and order, religion, health, professional engineering and architecture and education. The largest groups of workers were those concerned with education and health.⁽⁴⁷⁾

Approximately 270 teachers were employed in the Urban Region. 21 university teachers and 40 secondary school teachers catered for advanced education, and 127 men and women were employed in the primary schools.⁽⁴⁸⁾ Within the Urban area there were 14 public primary schools, two public post-primary schools, a training college, a school of art, and a university. There were also several private schools, both primary and secondary. Each had about 100 pupils. By any standards, Dunedin was well served educationally (Fig.19).

47. No detailed figures are available for all Professional activities in the Urban Region in 1901. What figures are available, have been used.

48. Education: Appendices to Journals, House of Representatives, (E/1), Wellington, 1901.

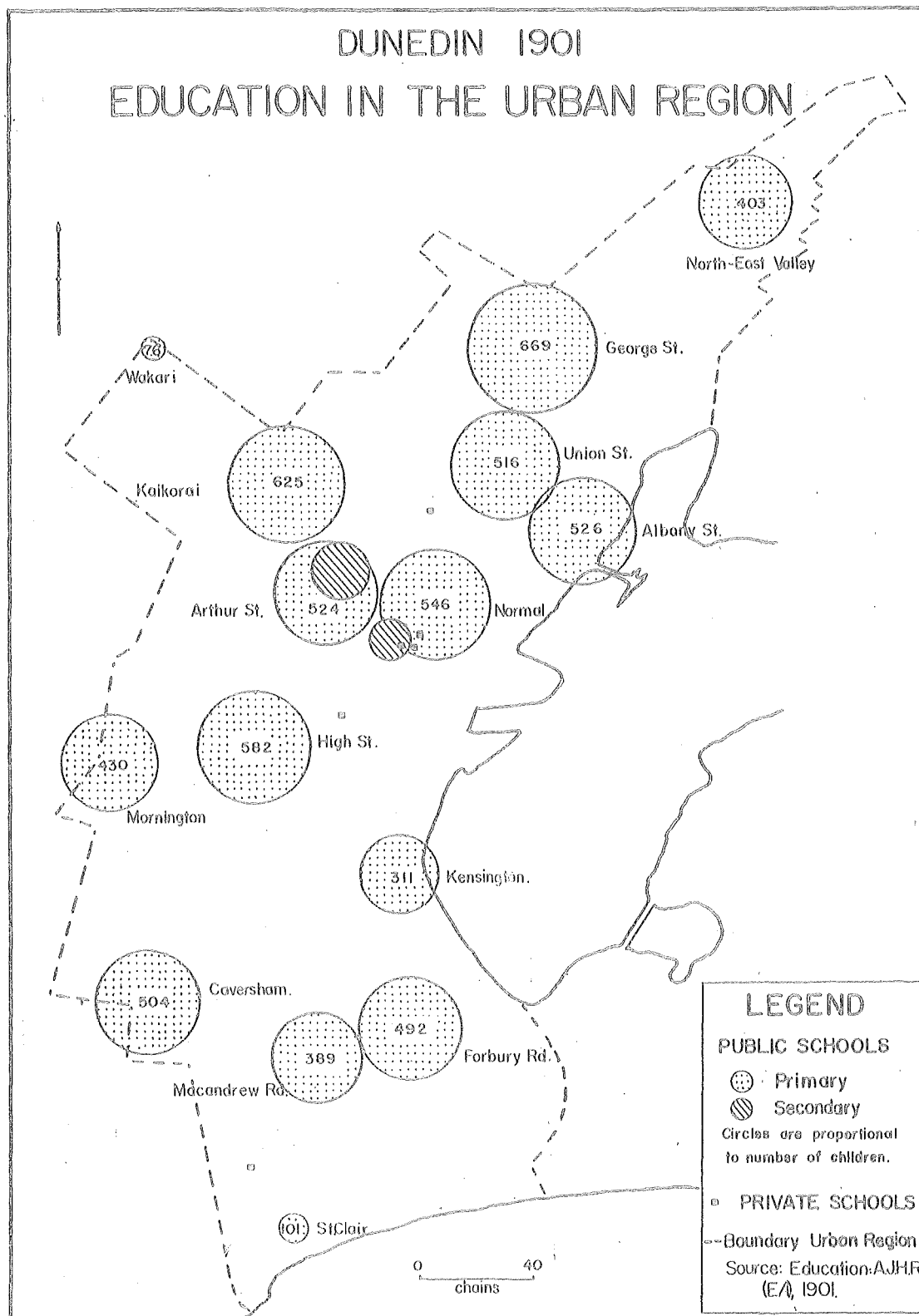


Fig.13.

The public secondary schools - Otago Boys' High School, Otago Girls' High School, and Christian Brothers' (The Roman Catholic Secondary School) catered for the small proportion of Dunedin's youth (about 7 percent⁽⁴⁹⁾) who were fortunate enough to receive secondary schooling. The emphasis in school teaching was on classics, and modern languages. Although the University and Medical School had only 376 students,⁽⁵⁰⁾ they were particularly important in the life of the Colony. All New Zealand *from 1877* doctors received their training at the Otago Medical School.

Religious education was not neglected. There were 31 Sunday Schools in the Urban Region. In the 1901 Directory, 81 music teachers were listed. Dunedin's interest in culture and refinement is reflected in this emphasis on musical education. Public lectures were also frequently arranged and were well attended. The Athenaeum had a wide range of technical books to encourage its members to read widely.

Municipal government and general administration in Dunedin were shared by the Dunedin City Corporation and seven suburban boroughs (Fig. 20). Each borough was divided into four wards returning two members each. The elected Councils and Mayors were responsible for Municipal Government and for the administration of public services. Several standing committees of Councils had control of reserves, gas, water, finance, tramways, public works and sanitation, and in addition permanent staffs

49. Ibid., p.12.

50. Ibid., p.40.

DUNEDIN 1901 GOVERNMENT SERVICES

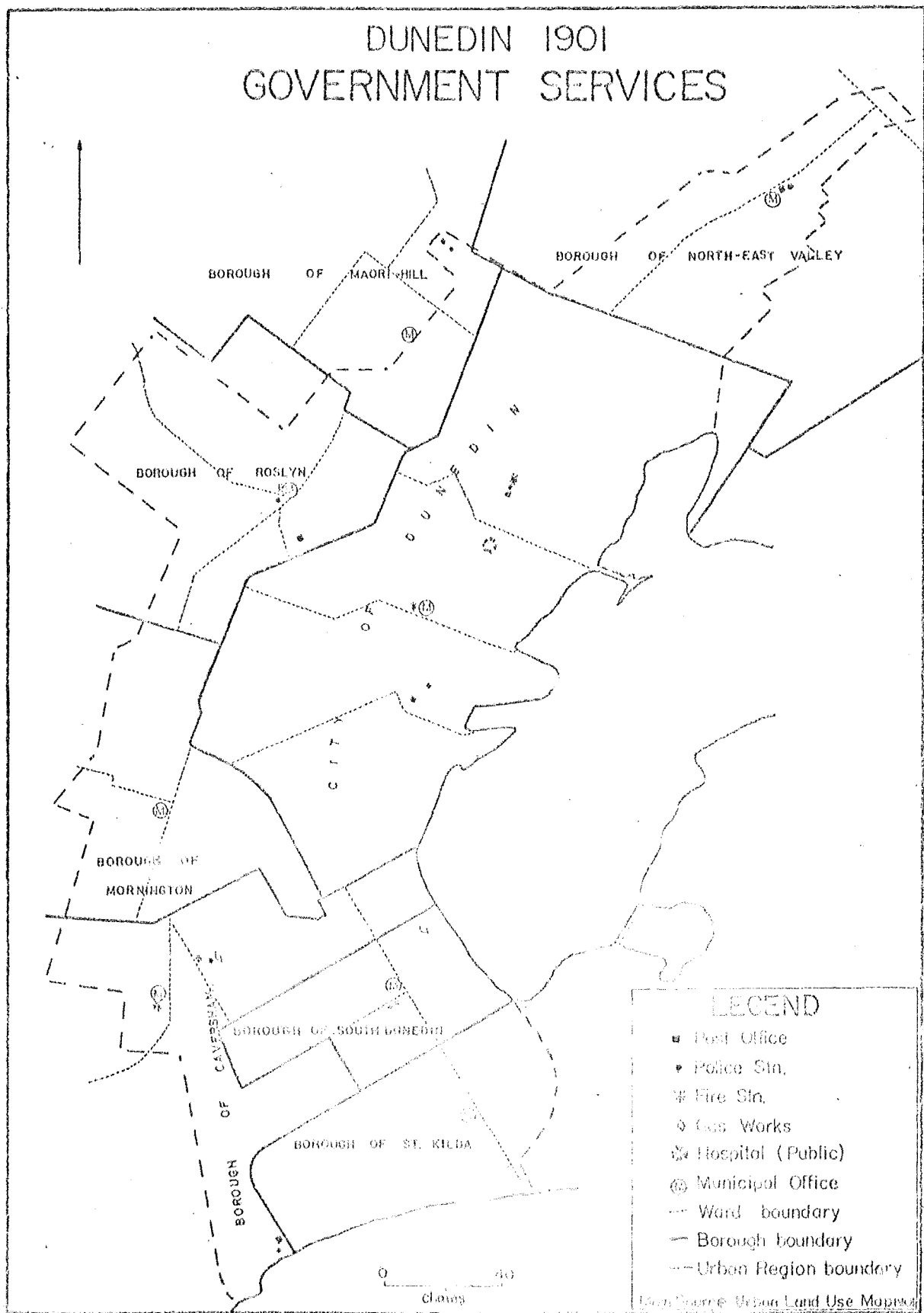


FIG 20.

under Town Clerks and engineers dealt with daily maintenance. In some areas the municipal services provided were better than in others. Often the quality of the services was in proportion to the zeal and interest of the authorities, though naturally the size of the area for which they were responsible was an important factor.

Each borough jealously guarded its rights. As a result considerable negotiation was required to obtain any agreement for the establishment of centralized services in the Urban Region. The suburban boroughs might have saved themselves considerable expense had they been willing to co-operate with the Dunedin City Council. This dispersion of authority among eight boroughs and innumerable standing committees, made any systematic planning well-nigh impossible. Sewage, drainage, water-supply and lighting were not systematically planned and administered until the first decade of the twentieth century. In 1901 most of the community services were publicly owned. This probably ensured a better service than if private interests were in control. This was the case at least with the tramways.⁽⁵¹⁾

Public health, drainage, water supply, and sewage were integral elements of the public services. The public hospital was situated on the North Dunedin flat in what had been the Dunedin Exhibition building of 1865. There were also four private hospitals in the Urban Region but they were concerned with convalescence rather than with casualty cases. During the

51. Evening Star, 12th December, 1953.

year 1901, 1,310 patients were treated in the Public Hospital, and there were 1,568 "out of doors" cases.⁽⁵²⁾ Of the "in patients", 800 were from the Urban Region and the remainder from the outlying settlements and rural areas. As the hospital worked in close association with the Medical School, the people of Dunedin benefited from the specialized facilities maintained there. Most of the epidemics, and the general poor health of the people, directly reflected the poor drainage and sanitation existing in Dunedin 1901. Wellington, by contrast, was far ahead of Dunedin.

"The sanitation of Wellington is infinitely superior to Dunedin. The drainage system there is a most efficient one. The system is working remarkably well, and the result is the number of cases of typhoid and other diseases arising out of defective sanitation, is nil." (53)

The most evident defect of the sewage system in Dunedin was the disposal of waste. "The whole effluent has been discharging into the harbour without any treatment whatever, the result being that when the tide (which recedes for a considerable distance) is low, constitutes an offence as well as a danger to the public health."⁽⁵⁴⁾ Although a board was established to deal with these and related problems, it did not accomplish anything until 1902. A night cart system operated in all areas, but judging by the not infrequent letters to the paper, the efficiency of the system left much to be desired. There was a public refuse collection, but

52. Report on Hospitals and Charitable Institutions in the Colony: Appendices to Journals, House of Representatives, (H/22), Wellington, 1901.

53. Dept. of Public Health: Appendices to Journals, House of Representatives, (H/31), Wellington, 1901.

54. Loc. cit.

great piles of rubbish could still be seen on most vacant lots. While the condition of the streets was poor, it was the filth and offal cast into them which was particularly distressing and also detrimental to public health. The fact that some alleyways were used as public conveniences did not help.⁽⁵⁵⁾

The city's water-supply came from the Silverstream and Leith Valley reservoirs; inadequate, unfiltered and of doubtful quality. Mornington, Maori Hill and Roslyn, still relied on rainwater, as these suburbs were higher than the reservoirs. A new water supply scheme mooted by the Council in July 1901, failed to gain the required number of votes.

The city gasworks, situated in South Dunedin, had been purchased by the Corporation in 1875 and a regular and efficient supply was available. The works in Caversham were still privately owned in 1901. Gas was supplied to domestic users for heating, cooking, and lighting, and to many small factories where a heavy steam-plant was unnecessary. Electric street lighting had already been installed along the route of the Maori Hill tramway, and the development of hydro-electric power from Lake Waipori was under investigation. All the suburban boroughs were supplied with gas lighting, although lamps were often too far apart to light the streets effectively.

While Dunedin City had a professional fire brigade, the suburban boroughs still relied on volunteer action. The professional brigade, comprising a captain and 20 men, reduced

55. Otago Daily Times, 13th July, 1900.

the loss by fire to a fifth of what it would have been.⁽⁵⁶⁾ The fire station was located in the Octagon behind the Municipal Offices, with reelhouses in Great King and Cumberland Streets.

As the focus of the Otago province, Dunedin was the centre for many government departments. The Lands Department, the Valuation Department and the Department of Labour all had their offices in the Post Office building. The Post Office itself employed a large number of workers. By 1901 a daily postal delivery had been in operation for 37 years. A large central Post Office in Princes Street and eight suburban Post Offices were the centres for the daily distribution of mail.

Some 46 constables, five sergeants and an inspector represented the force of the law.⁽⁵⁷⁾ Eight police stations scattered through the Urban Region were usually staffed by a constable, while the remainder of the police were attached to the Central Station. The police did not patrol a set beat, but were on continual call at the station.

There were almost 100 representatives of the legal profession in the Urban Region. These were barristers and solicitors, and their law clerks. Between 60 and 80 engineers, architects, and surveyors also occupied small offices in the central area.⁽⁵⁸⁾ Many of them, especially the engineers,

56. J.S.Little: A Century of Fires and Fire Brigades in Dunedin, Dunedin, 1948, p.134.

57. Report on the Police Force of the Colony: Appendices to Journals, House of Representatives, (H/16), Wellington, 1901.

58. J.Stone and Co: op.cit., pp.707-775.

were connected with the mining interests of the city. In addition there were smaller numbers concerned with the functions of the military, religion, charity, and the fine arts.

Many of the professional functions were centred in Dunedin as it was the focus of Otago Province. Other professional functions that have been considered were mainly concerned with the operation of the city services.

Social, and Recreational Functions.

The cultural attainments of Dunedin were well-known throughout the Colony of New Zealand. Churches, schools, art societies, an Atheneum, musical societies and scientific and literary institutes all provided opportunities for "culture and refinement". The call was for self-improvement and advancement. Occasions for "friendly discourse", and mutual assistance were innumerable in Masonic lodges and friendly societies. Home pleasures and family gatherings had not yet been superseded by the picture theatre and by large-scale organised entertainment.

Dunedin had five large halls for its numerous orchestral and band concerts, balls, and dramatic presentations. The new cineomatograph productions had only just begun in Dunedin and in 1901 had not detracted from the well established vaudeville shows, which were still the most popular public entertainment.

There were also 670 acres of parks and recreation areas scattered through the city but these reserves were not well cared for. "Opposite the Botanic Gardens - at the north end of the Town - the reserve needs to be properly laid out. At present the reserve looks as if it is no-man's land, waiting

for the jerry builder to erect buildings on it".⁽⁵⁹⁾ Nevertheless, the Dunedin and Suburban Reserve's Conservation Society had been active for a number of years. In 1900-1901, the Society was busy planting trees in Tahuna Park, and had already planted trees in the Triangle⁽⁶⁰⁾ and in the Octagon. These parks provided the facilities for outdoor sports. Bowling, cycling, rowing, cricket and swimming were popular summer sports. In the winter months, rugby held sway.⁽⁶¹⁾ In summer the salt water baths at St. Clair, Pelichet Bay and Frederick Street were extremely popular. Horse racing, both galloping and trotting, was a regular activity at Forbury Park in St. Kilda. The annual Agricultural and Pastoral Association Show always drew large crowds. "The superb weather was doubtless the chief contributing cause of the record turnout..."⁽⁶²⁾ at the show in 1901. At any of these activities or functions the businessman was easily recognised. In black bowler, wing collar, black jacket and stovepipe trousers, he stood out from the worker in his grey tweeds, black waistcoat, jacket and cap. Women favoured plain black and white clothes, long full skirt, bustles, and high starched collars. Feathered hats and lace shawls were only for the fashionable. (Plate 111).

Sunday was observed as a religious holiday. Churches and Sunday Schools were well attended. It was the chance for worker and businessman alike to put on his Sunday-best and to

59. Otago Daily Times, 27th April, 1900.

60. Now Queens Gardens.

61. Otago Daily Times, 18th January, 1898.

62. Otago Witness, 4th December, 1901.

Plate 111

The City Scene: This photograph is a view south down Princes Street from the corner of High and Dowling Streets. The business man was quite striking in his tapered trousers, black jacket and bowler hat. The labourer standing off the pavement on the right wore the working man's peaked cap.

The photograph also gives an excellent impression of the streets with their broken surfaces and horse droppings; a vivid contrast to the sanded pavements.

Photograph: Hocken Library



stroll in the gardens or take a tram to St. Clair, or St. Kilda.

Although Dunedin with almost 50,000 people had attained something of the dignity of a city, there was a much closer and more intimate way of city life in 1901 than was to develop in later years. This was a reflection of Victorian social attitudes and the Victorian way of life, particularly the closeness of the family ties. However, while public citizens were well known and respected, Dunedin was no longer a town in the sense that everybody knew everybody else. The population consisted predominantly of the middle and working classes. A small social elite (centred around the Otago Early Settler Association) amused themselves with their garden-parties, balls, and country drives. At the same time, the lack of organised evening amusements had already created a problem of juvenile irresponsibility for certain types of young men lounged the streets at night molesting women and other travellers.⁽⁶³⁾ But generally speaking, Dunedin in 1901 was a sober, sedate, and dignified industrial and cultural centre of Victorian New Zealand.

63. Otago Daily Times, 30th January, 1899.

CHAPTER V

THE CITY AND ITS SUB-REGIONS.

Introduction

Urban geographers usually examined the structure of land use in a city by considering each type of function in turn. Thus in the study of any city there is generally a discussion of the commercial core, outlying shopping areas, industrial regions, residential areas, and recreational facilities.⁽¹⁾ Each 'land use type' is taken out of its setting and considered separately. However, it seems more valid to consider the 'type of function' in its local or sub-regional setting rather than in isolation. As Hartshorne writes...."To think geographically is to think of phenomena not as individual in themselves, but as elements determining the differential character of areas."⁽²⁾

Relatively homogeneous regions can be defined in a city, therefore a regional approach seems the more useful in a study of this sort. There are four advantages for this approach.

First, Regions can be differentiated by using a variety of formal criteria, including natural boundaries, population density, housing of both poor and good quality, the amount of industry, and the position of well defined commercial centres.

Second, Areas within the city not only have different formal characteristics, but also operate to some extent as trade and social units. The housewife collects many of her daily

1. See for example: H. Batholomew: Land Uses in American Cities, Cambridge, 1955 and A.E. Smailes: The Geography of Towns, London, 1953.

2. R. Hartshorne: The Nature of Geography, Pennsylvania, 1949, p.242.

requirements from the local store, while churches and community halls are the focus for social activity within the district.

(In 1901, when the population was less mobile than today, the Church as a centre of social activity was more important.)

F. and G. Stephenson have written:

"Among the important things which make up a neighbourhood are, first of all the houses in which people live, and secondly the various community buildings which they use. These latter consist of shops, cinemas, schools, churches, public houses, etc., which are to be found in a large or a small degree at strategic points in any residential area. Such public and commercial buildings tend to group themselves together into some form of shopping or civic centre and to be patronized by the surrounding population." (3)

A third advantage is that the interaction of the various types of land use can be studied. Industry, for example, always has an important effect on nearby houses. Finally the sub-regional method has the advantage that the picture of the Urban Region is built up area by area and not from a series of land use studies.

The boundaries of the sub-regions discussed in this chapter are defined entirely on formal criteria.⁽⁴⁾ The one important disadvantage in an approach based on sub-regions is that the boundaries may be over-emphasized. It is important to remember that workers and shoppers do go outside their local sub-regions.

Sub-regions were delimited by the formal criteria. The City (within the Town Belt) and the North-East Valley were out-

3. F. and G. Stephenson: Community Centres, Housing Centre, London, 1942, p.31.

4. An attempt was made to use Reilly's Law of Retail Gravitation, but the objectivity necessary within such an approach was not found possible in this historical study. See Appendix VI.

lined by natural boundaries. While the City Sub-region was the most complex within the Urban Region, the North East Valley was a homogeneous area both in the value of housing and in population density.

Roslyn-Maori Hill and Mornington, the two Sub-regions on the hillslopes west of the city were more difficult to define. Maori Hill was associated with the Roslyn shopping area by an electric tramway which ran along the hill-top. The houses in Mornington were of quite different average value from those in Roslyn-Maori Hill,⁽⁵⁾ moreover there was no suburban shopping core in Mornington. The western part of the Roslyn-Maori Hill with its low population density could be separated, but this would form a further area within the Sub-region rather than a Sub-region itself. Its existence demonstrated Roslyn's character as an expanding outer suburb.

Caversham was clearly separated from Mornington by a natural boundary of steep slopes and vacant land. The dividing line between the Caversham and South Dunedin Sub-regions was more difficult to define. In each case there was a distinct commercial core and this was used as the centre for the Sub-region. For example, Hillside Road was the commercial core of South Dunedin.

St. Kilda and St. Clair were divided off on the basis of

5. District Valuation Rolls for the Boroughs of Mornington, Maori Hill, and Roslyn, 1899-1902, Valuation Dept., Dunedin.

population density, and housing value respectively. While St. Clair was well known for its 'grand homes', St. Kilda still had large areas of vacant land.

These Sub-regions that have been outlined will be analysed to show their differences and local characteristics.⁽⁶⁾

The City Sub-Region 1901.

The City Sub-region lying within the Town Belt was both an administrative, and a natural sub-regional unit. Although several "areas" can be distinguished within the Sub-region (each of which, will be considered in due course) the Sub-region falls into two main parts: the central business district; and the surrounding residential area (Fig. 21). The former, it must be remembered, was the focus of the province and of the whole Urban Region, as well as the Sub-region within the Town Belt.

The Central Business District and Port Area.

The complex pattern of commercial, professional, and industrial land use that makes up any central business district, was located about the twin cores of the Octagon, and the Exchange, and along the main city thoroughfare - Princes and George Streets (Fig. 22). It was an extremely elongated central business district stretching from Andersons Bay Road in the south, to Pitt Street in the north. In the east the central business district

6. A map of Sub-regions has not be included, each Sub-region has been located separately.

DUNEDIN 1901

CITY SUB-REGION

GENERALISED LAND USE

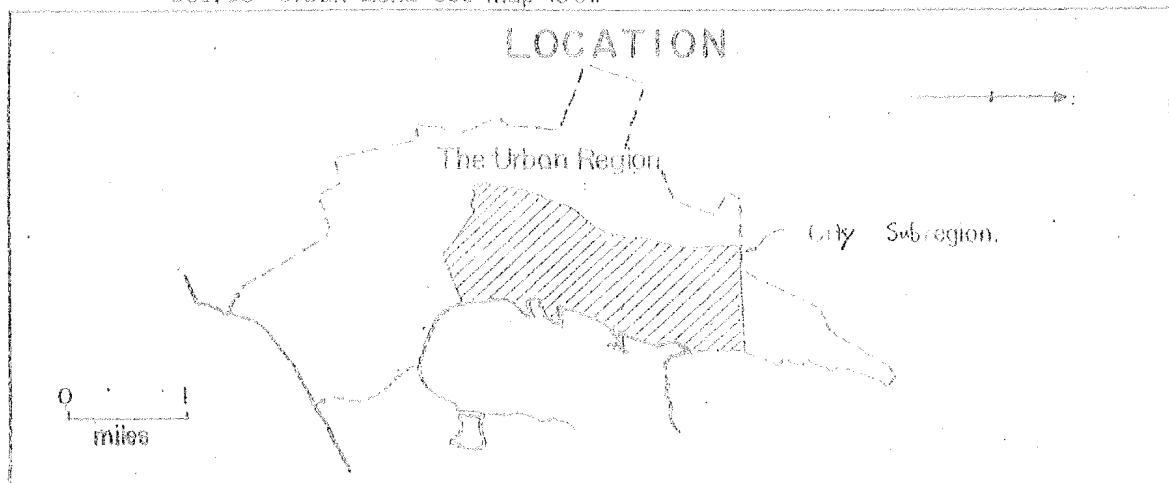
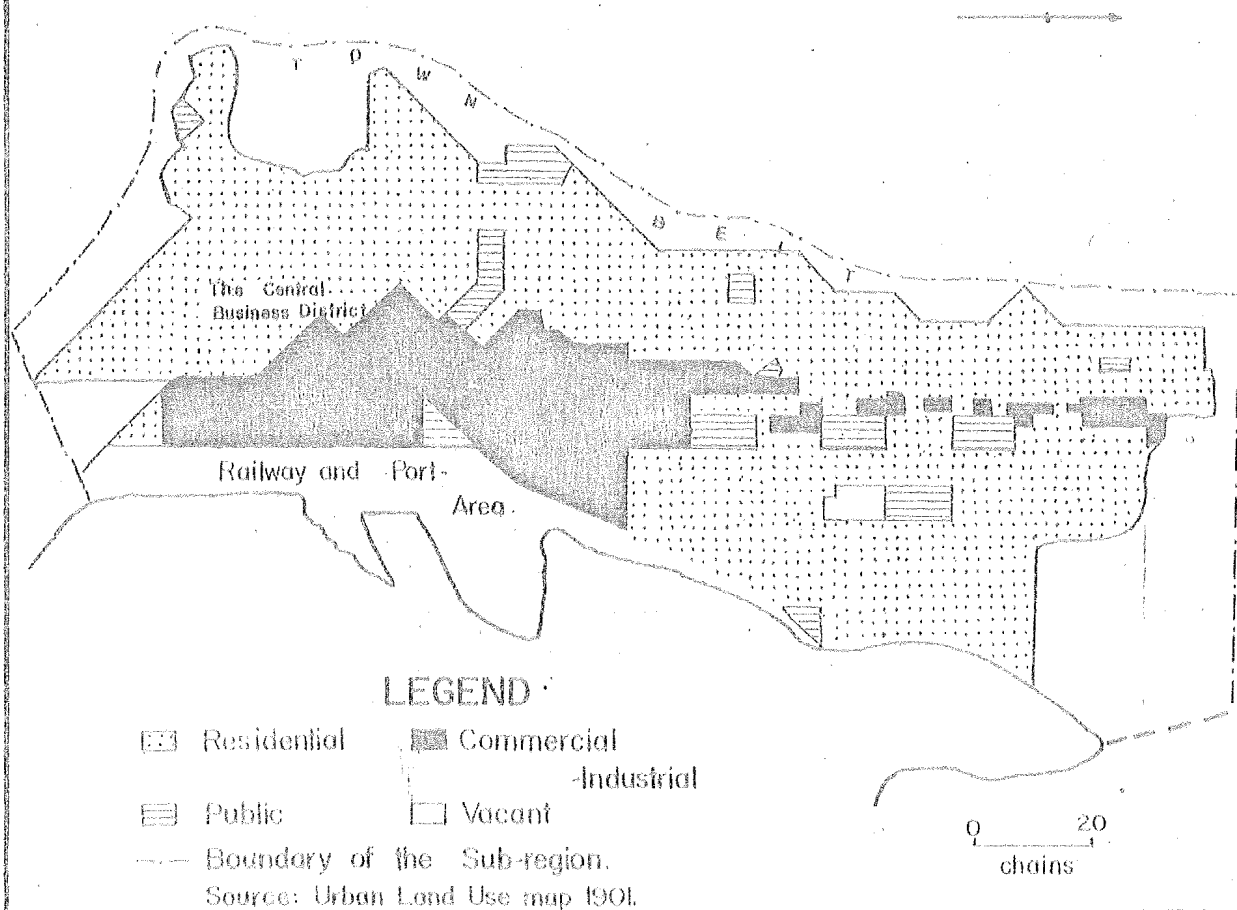


Fig.21.

DUNEDIN 1901

THE CENTRAL BUSINESS DISTRICT AND PORT AREA

LAND USE

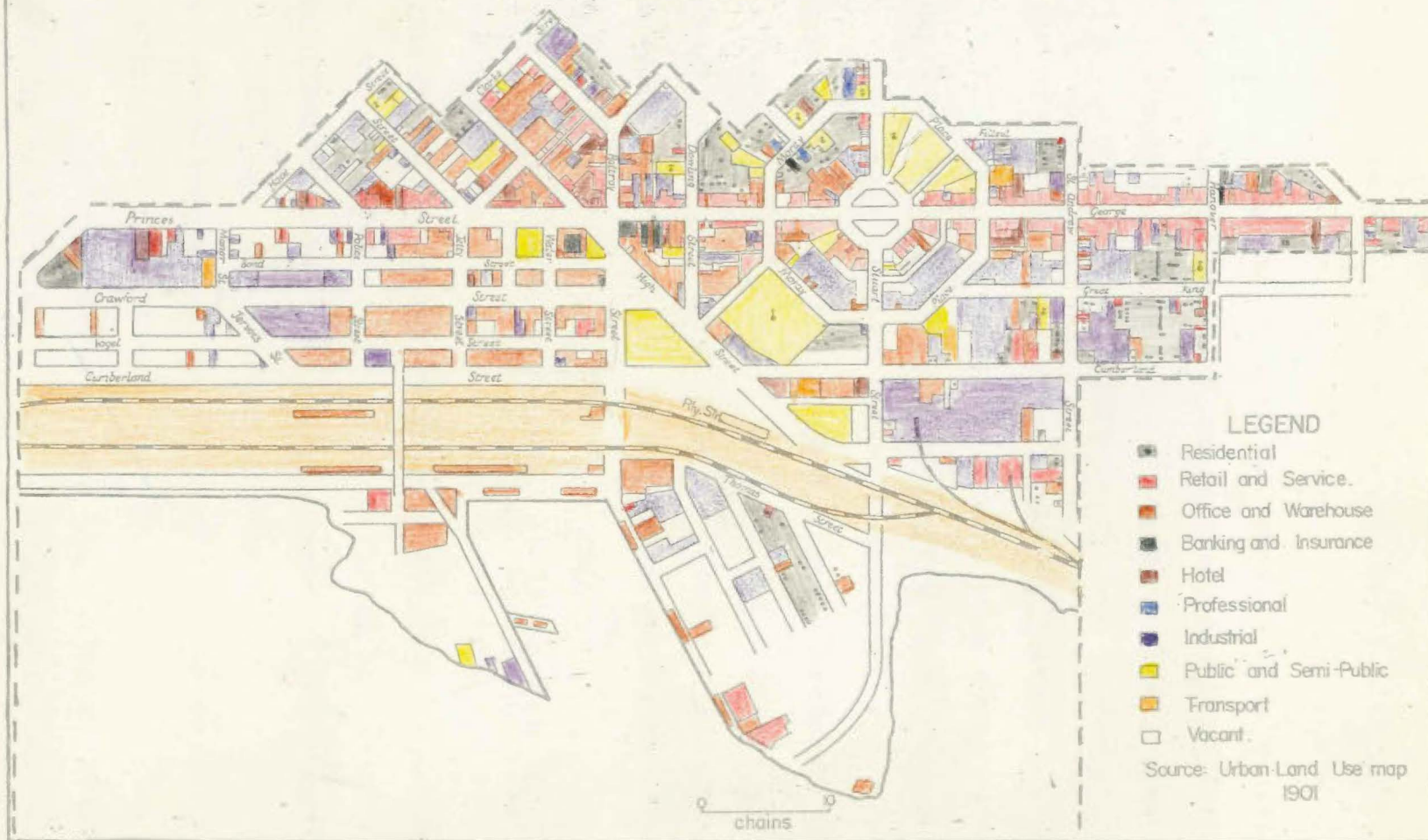


Fig.22.

Some symbols have not shown in key.

extended up the spurs and valleys, but in nearly all cases stopped near the first intersecting street. This was a response to the steep gradient at which the side streets left the main thoroughfare. Towards the west, the central business district extended to the wharves and storage sheds of the port area (Fig. 22).

The zone of most imposing structures was between the Octagon and the Exchange. In this central core these substantial buildings were often three or four storeys high, with ornate facades and intricately adorned ballustrades (Fig. 23). The classical columns of the banks, the renaissance features of the insurance offices and the gothic styles of the churches all added to the character of this central core. However, this impressive profile was soon lost to the north and south, where buildings of two storeys were more common. (Fig. 23).

The view over the central business district from the Town Hall belfry was of a jumble of iron and slate roofs, skylights and chimneys, occasionally interrupted by the tall smokestack of a factory. Most buildings were built of brick and stone with the occasional wooden structure badly in need of maintenance. (Fig. 24). Buildings were crammed together, and separated only by small sunless alleys which opened into dingy backyards, and windowless brick walls. (Plates iv and v).

This central business district was the centre of administration, of the majority of financial transactions and much of the social activity. It was the focus of inter and intra-urban transport, and the trans-shipment centre for goods to and from the interior of the province. The central business

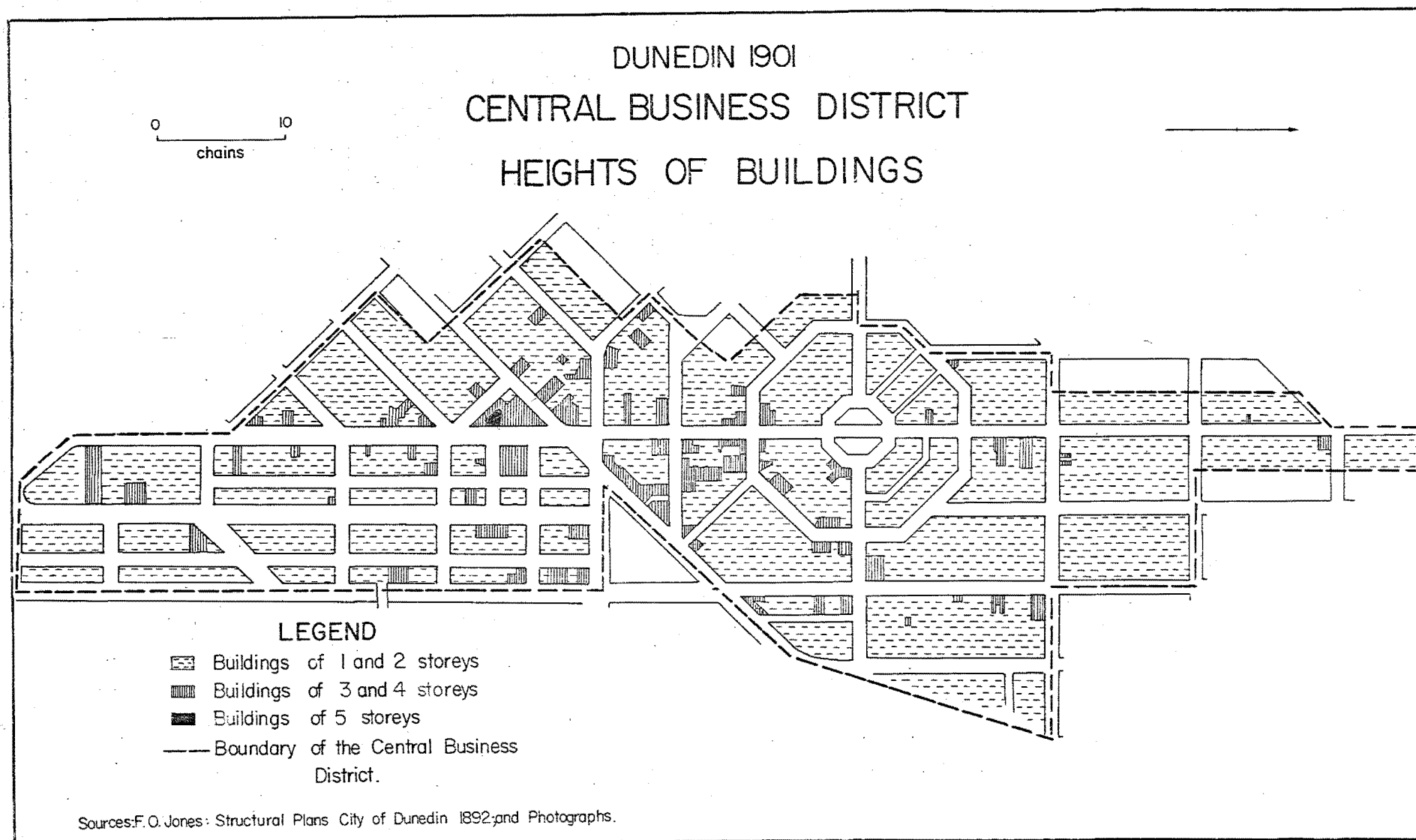


Fig.23.

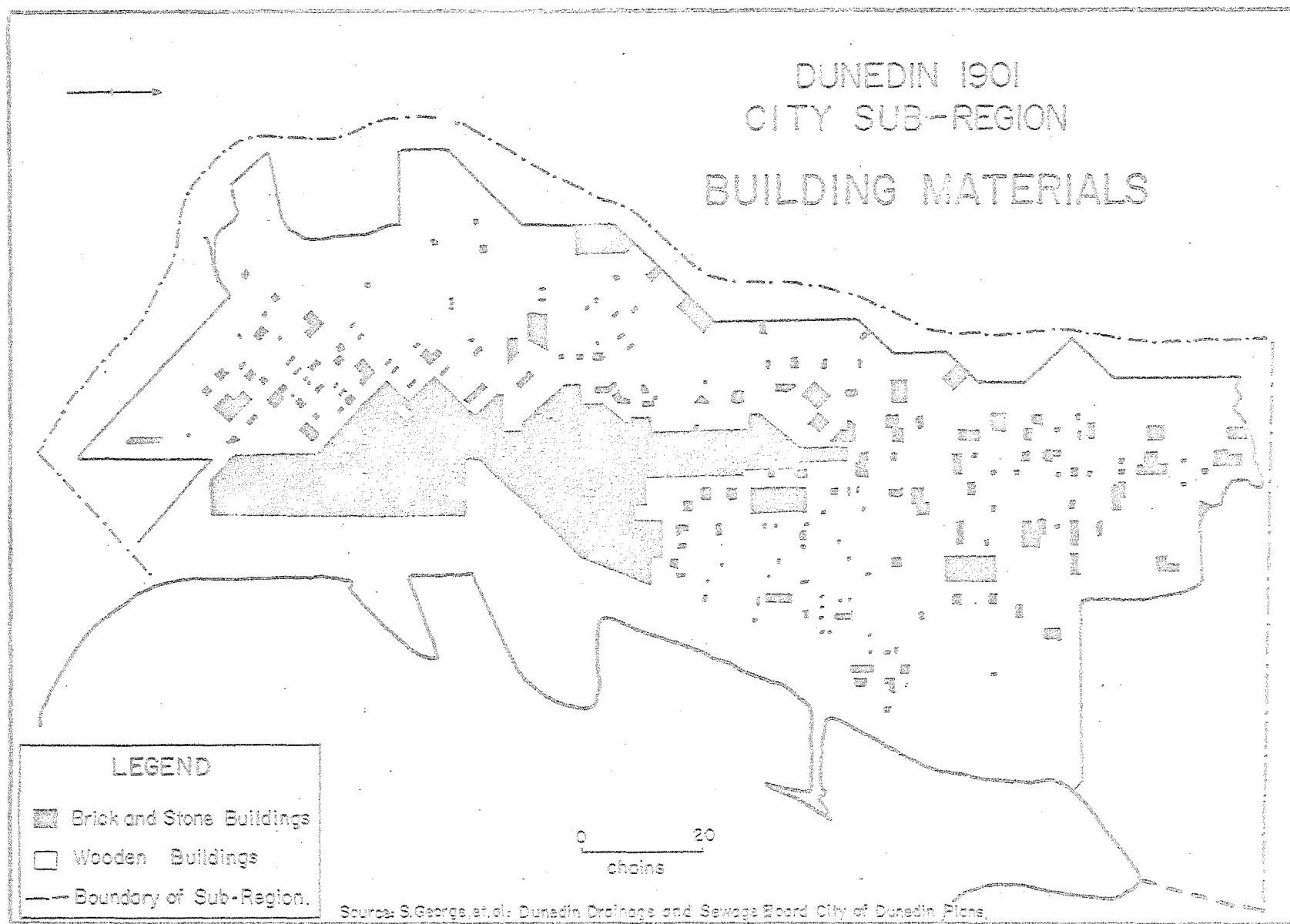


Plate IV The Central Business District (South):

This informative photograph was taken at the turn of the century, from the Town Hall belfry looking south down Princes Street. In the left of the photograph the commercial and warehousing area of the city shows up particularly well. The imposing three and four storey buildings without verandahs indicate the banking, insurance, and professional offices. In the foreground, buildings are jammed together with untidy backyards. In the left distance the irregularly settled suburbs of South Dunedin and St. Kilda can be seen.

Photograph: Hocken Library



DUNEDIN FROM THE TOWN HALL BELTAY. W. B. A. MORRIS.

Plate V. The Central Business District (North):

This view over the Central Business District looks north along George Street to Knox Church in the middle distance. It is a complementary view to that of Plate VI. As it was the main retail street, the forest of verandah poles and canvas blinds were to keep the sun from the interior of the premises. There were fewer tall buildings. Most were about two storeys. The industrial area crowding against the retail zone is indicated by the presence of several tall chimneys. Some of the crowding housing of the North Dunedin flat shows up in the right middle distance. An old row house can be located almost in the middle of the photograph (arrow).



district also had the highest land values, the tallest buildings, and the majority of the work places in the Urban Region.

Within this complex central business district several functional areas can be distinguished (Fig. 25).

The retail area of Dunedin in 1901 was along Princes Street and its extension George Street. Over 80 percent of all the retail establishments in the central business district were situated in this one city thoroughfare (Fig. 26). Although only 66 of the 157 retail establishments were situated in Princes Street, nearly all the large department stores were located in Princes Street. They were situated mainly between the Octagon and the Exchange. However, George Street had 39 food stores, more than twice as many as Princes Street. The great concentration reflects the importance of Princes and George Streets as a main route. Large numbers of people used these streets and thus provided a substantial proportion of the customers.

The shops were located on the ground floor street frontages. They had characteristic iron verandahs with large canvas blinds to keep the sun off the windows. The supporting poles were a study in intricately curved ironwork. Few businesses were the same size. The largest clothing stores had more than 100 assistants, and occupied buildings of two or three storeys. In the cases of Brown Ewings and the D.I.C. the retail section spread over two floors with storage on the upper floor.⁽⁷⁾ A

7. The Cyclopedia Co. Ltd: The Cyclopedia of New Zealand,
Christchurch, Vol.4, 1905, p.301.

DUNEDIN 1901
GENERALISED AREAS
WITHIN THE CENTRAL BUSINESS DISTRICT AND PORT AREA

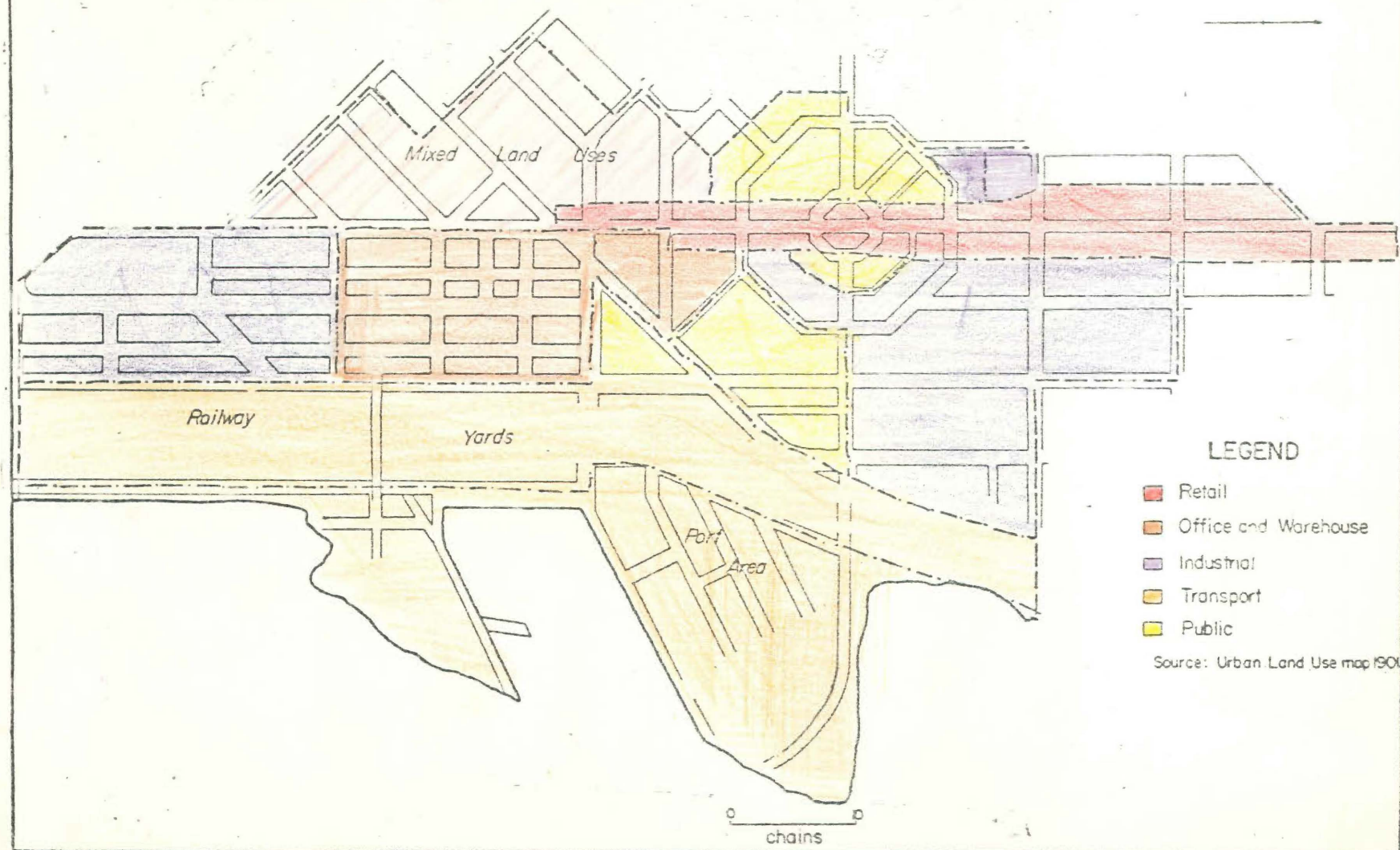
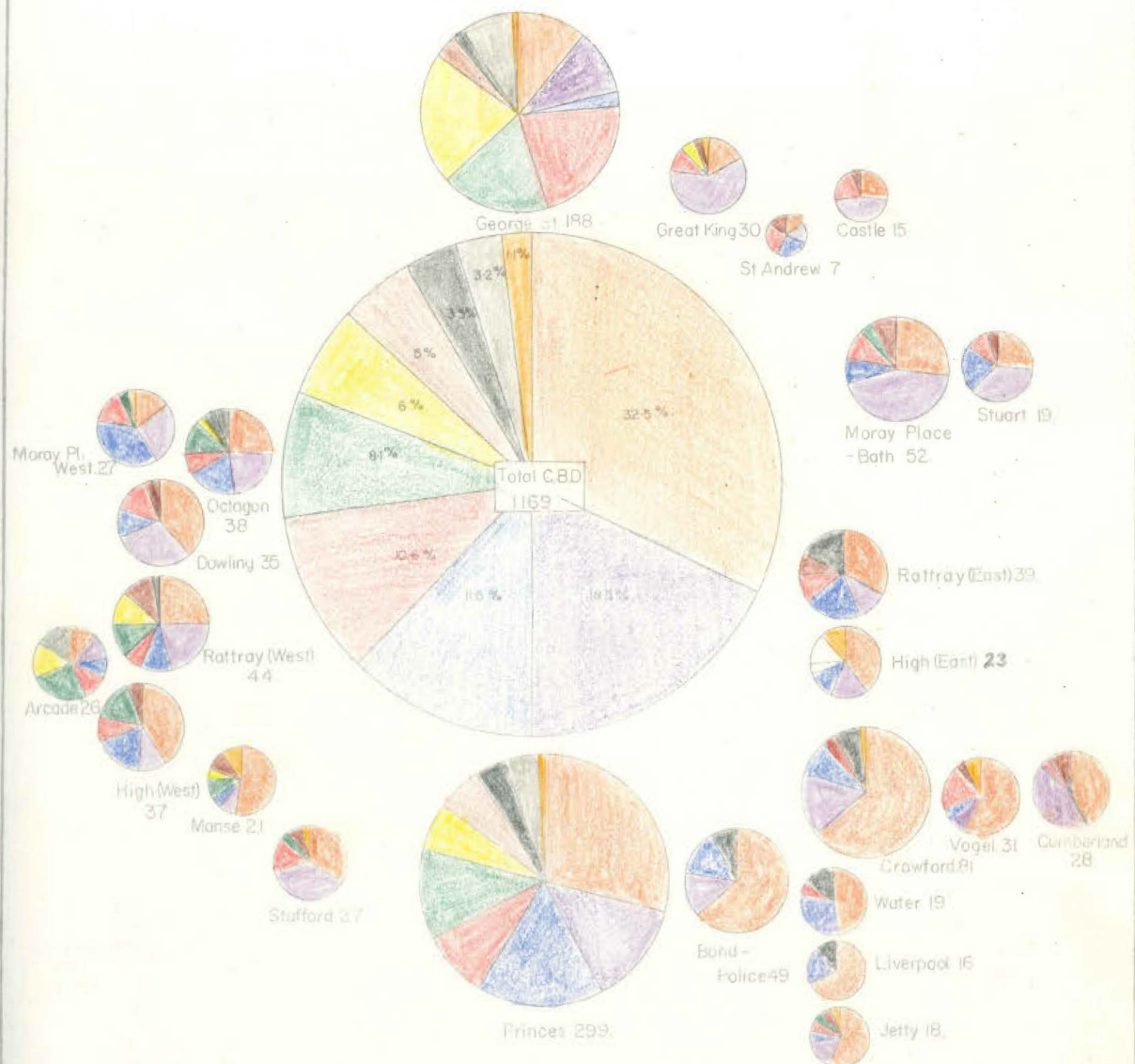


Fig 25.

CENTRAL BUSINESS DISTRICT PERCENT AND NUMBER OF BUSINESS ESTABLISHMENTS PER STREET



LEGEND

- | | | |
|---------------------------------|--------------------|----------------|
| Commercial office and warehouse | Commercial service | Bank |
| Industry | Other retail | Retail apparel |
| Professional office | Retail food | Transport |
| Hotel | | |

Source: Wise's N.Z. Post Office Directory

Fig. 26

host of retail businesses, including jewellers, hairdressers, tobacconists, bootmakers, chemists and booksellers were located in tiny premises. These were one-man-concerns though sometimes an assistant was employed.⁽⁸⁾ In a typically Victorian way, shop interiors were often cluttered with merchandise, which was scattered over counters, on the floor, and even suspended from the ceiling. Above the smaller retail premises were living quarters. At the rear of the shops in the open portion of the sections, was the inevitable clutter of cases and packages.

The block delimited by Police, Rattray, Cumberland and Princes Streets was essentially the commercial area of the central business district. Its dominance as the commercial zone of the city can be seen in the land use map and in the diagram of establishments per street (Figs. 22,26).

The commercial offices were mainly located in the Exchange (Plate VI) and in Princes Street south of the Exchange. Dredging companies, engineering firms and shipping companies had their offices in this area. Twelve of the 42 banking and insurance houses in the central business district were located in Princes Street. Some commercial and shipping agents had premises in the streets leading to the wharves.

One-third of all the warehouses in the Urban Region were located in Crawford, Cumberland and Bond Streets. (Fig. 26). Warehouses acted both as distributing centres for imported goods,

8. Ibid., p.359.

Plate VI

The Commercial Focus: The Exchange,
or Custom House Square, was the heart
of the commercial area of Dunedin, and
focus of the transport system.

Horse cabs, horse trams, a cable car
waiting to proceed up High Street, and a
carter's dray, are all visible. On the
extreme right is the Grand Hotel. In
the middle of the photograph is the
Colonial Mutual Life building, on the
extreme left is the Colonial Bank. The
buildings in this photograph are striking
examples of Dunedin's 'Victorian solidarity'.

Photograph: Hocken Library



and as stores for wool, grain, and manufactured articles awaiting export. J.H.Kirk, Murray Roberts, and the National Mortgage & Agency Coy. of New Zealand, all had large staffs handling wool and skins. Neill and Co., W. Scoular, Hayman & Co. and Mackeras and Hazlett were four of the largest general importers.⁽⁹⁾

Just as George Street and Princes Street north were the focus of retail Dunedin, so Princes Street south was the focus of commercial Dunedin. However, there were other functions in this commercial zone. For instance, several clothing manufacturing firms had premises on the upper floors of three and four storey commercial buildings.

Princes Street was also the focus of the professional offices. Fifty-one of the 128 offices in the central business district were located there (Fig. 26). While lawyers and solicitors made up the majority of these some doctors also had rooms in Princes Street.

In 1901 the Port area presented a rather unkempt picture (Plate VII). Large areas had only been roughly levelled after reclamation had finished. However, there were adequate facilities for storing goods. The Tongue wharf had two large sheds and there were two on the Cross wharf. On the north side of the steamer's basin there were another three storage sheds. As well as these facilities connected directly with the operation of the port there were six factories, three warehouses, and three

9. Ibid., p.348.

Plate VII The Port Area: The Port area was only partly developed in 1901. Storage sheds and factories constitute the prominent buildings scattered along the edge of the harbour. Reclamation is proceeding in the left of the photograph. The Commercial Chambers (middle left) and First Church (middle right) are prominent features in this view. In the middle right of the photograph are some of the poorer cottages of Stuart Street. These stand in contrast to the higher class dwelling in the foreground.

Photograph: Hocken Library



coal companies located in the port area.⁽¹⁰⁾ As these were establishments that relied a good deal on transport, they were located in the port area to be within easy reach of the railway which ran just to the west of the wharves. The Wharf Hotel patronized by many of the "lumpers",⁽¹¹⁾ was situated in Rattray Street.

The smaller lower factory buildings of light and heavy industry crowded in against the office and warehouse district. One large area west of the Octagon was bounded approximately by Stuart, Castle, George and St. Andrew's Streets (Figs. 25 and 26). In this section there was a mixture of large confectionery works, engineering factories, coach building factories, boot factories and a brush company. Two large firms gave the area an unmistakeable aroma. McLeod Brothers had their very successful soap and candle factory in Great King Street, and Hudson's confectionery business was only a block distant. It was essentially a mixed industrial area. The other large industrial district was in the south near the Town Belt, enclosed by Anderson's Bay Road, Crawford, Police, and Princes Streets (Fig. 25). This area was remarkable for its concentration of heavy industry, timber yards, and foundries. Five of Dunedin's largest engineering firms were all located in south Crawford Street.⁽¹²⁾ Many of the engineering premises extended between

10. J.Stone and Co: Otago and Southland Directory 1902, Dunedin, 1901.

11. "Lumper" was the title of a wharf worker.

12. These were Massey Harris Co. Ltd., Cossens and Black, Shacklock's Ltd., Reid and Gray, and Methven and Co. J.Stone and Co: Otago and Southland Directory 1902, Dunedin, 1901, p.13.

two streets, including a facade of offices, the factory and a yard for storage.

Industrial, commercial, and retail uses were intermingled on the west side of Princes Street (Fig. 25). Nine of the factories manufacturing clothing were scattered through the area. The two largest factories, those of Ross & Glendenning and the Mosgiel Company, were located in High Street. There were specialist shirt and hosiery manufacturing establishments in Dowling, Maclaggan and Stafford Streets.⁽¹³⁾ Three printers were established in Manse Street. Two of the largest "carting" firms, Crust & Crust and the New Zealand Express Company were also located in Manse Street. Other factories in the area manufactured leather goods, furniture and chemicals.⁽¹⁴⁾

The district around Moray Place and the Octagon was not a homogeneous area of social, recreational and administrative functions (Fig. 25). Commercial and retail premises were found alongside public and semi-public buildings. (Fig. 22). However, the concentration in this area was the most significant in the central business district. In the Octagon were the offices of the Borough Council, The Anglican Cathedral, and the Atheneum. Around Moray Place there were four churches, the hall of the Psychological Society, the Choral Hall, two Lodges, and the Public Service Club, as well as hotels, restaurants, a coffee place and two tea-rooms.⁽¹⁵⁾ Included in this area were two private schools, the Normal school, the Training College,

13. Ibid., pp. 17, 50, and 70.

14. Ibid., pp. 16, 41, 50, 53, and 70.

15. Ibid., pp. 57-59.

and the Art School. Several teachers of music and eloquence were also located in this area.

The 200 residences in the central business district were usually small row-houses, or cottages, squeezed in behind factories or warehouses. They were always dingy and usually insanitary, for there were few windows and only back to back earth closets. They were invariably reached by dark and narrow alleys running between the tall brick factories and warehouses. (16)

Horse stables were scattered through the central business district, with a particularly large one in Moray Place and another in Great King Street. Great piles of horse manure associated with them did not help the city health problems.

At the heart of the City Sub-region was this central business district. The diverse areas within it, commercial, retail, and industrial, supplied nearly all the residents within the Sub-region with employment. It was also the social and recreational focus of the surrounding residential area.

The City Sub-region - Residential.

Apart from the scattered corner stores, small clusters of shops, occasional factories and some public uses the area surrounding the central core and enclosed by the Town Belt was wholly residential (Fig. 21). In 1901 this was a

16. S. George, et.al: Dunedin Drainage and Sewage Board City of Dunedin Plans, Nos. S1 to S132, 1903-1906, Scales: one inch to 40 feet and one inch to 100 feet, Dunedin Drainage Board, (unpublished).

contiguously built up area, only interrupted by the parks and gardens set aside for recreation. It was focused on the central business district, where the majority of the people worked and shopped.

On the basis of improved values,⁽¹⁷⁾ six classes of housing have been distinguished (Fig. 27). Each of these classes and its areal extent will be considered.

Houses in Classes A1 and A, those over £1,000 by value of improvements were the "grand homes" of Dunedin in 1901. They were set in splendid grounds often with tennis courts, vineries, and large outhouses, including of course a stable. The grounds were landscaped to set the house off, and often a long drive wound its way through trees to the front entrance. They were generally two storey brick homes with at least fourteen rooms. All these homes were equipped with water closets and baths.⁽¹⁸⁾ Staffs of servants were employed to manage these large houses. Wealthy merchants and company directors were the only people who could afford such pretentious dwellings (Fig. 28). The prospective buyer would have needed something like £2,000 to purchase any of these dwellings and in most cases a great deal more.⁽¹⁹⁾ The main difference between the two classes was one of size. Class A1, were invariably a bigger and more lavish version of Class A. However, neither class formed extensive

17. Appendix VII.

18. S.George, et. al: Loc.cit.

19. An idea of the market value of houses in Dunedin in 1901 can be gained from advertisements in the Otago Daily Times, 1901.

DUNEDIN 1901 RESIDENTIAL CLASSES IN THE URBAN REGION

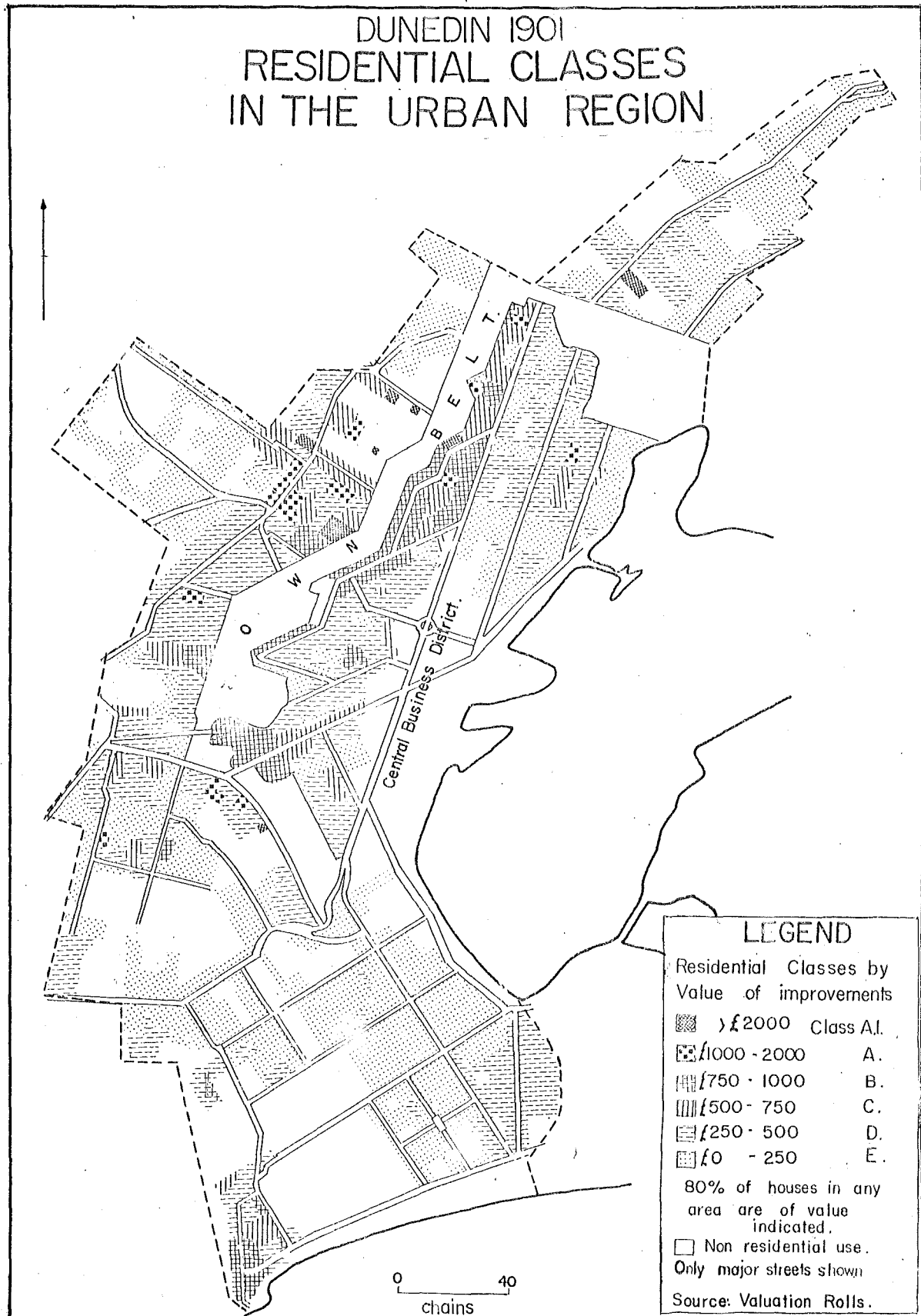


Fig. 27.

areas but groups of one or two houses were scattered along the Town Belt (Fig. 27).

Houses in Class B were less palatial than those in the two groups already discussed. These houses ranged between £750 - £1,000 by value of improvements. They were the homes of middle-class business men, larger shop owners, and the wealthier professional men.⁽²⁰⁾ The market value of these homes ranged between £1,000 and £2,000. Built of wood with corrugated iron roofs, they were not always of two stories, but were usually square in shape. Verandahs were smaller and much less ornate than in the preceeding classes, though there was still some variety in architecture (Fig. 28). Baths and water closets were still present although there were fewer homes with extensive outhouses and stables.⁽²¹⁾ Set back from the road on quarter and half acre sections, these homes nearly always had neat and well-kept gardens. They formed a fairly continuous block just below the Town Belt, stretching almost its entire length (Fig. 27).

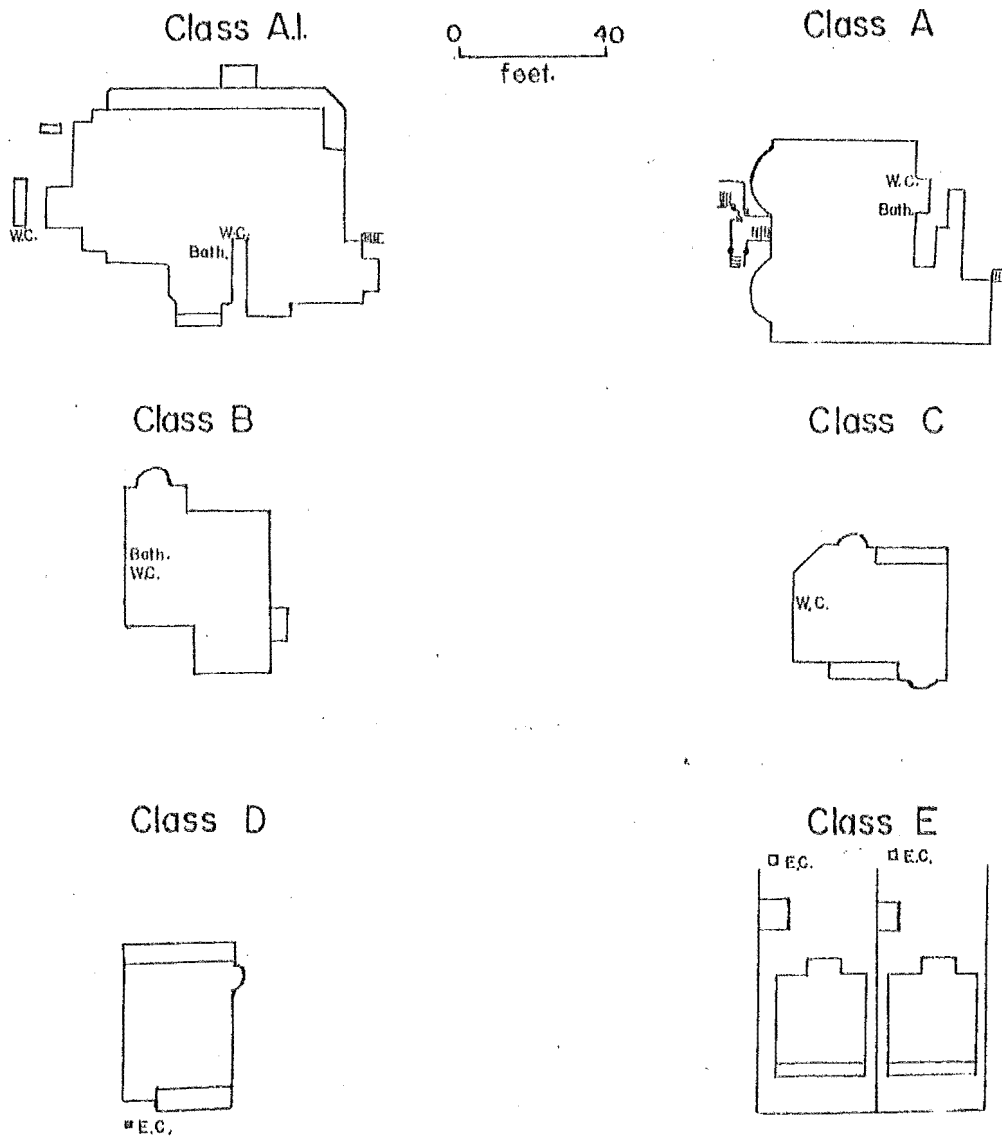
The houses between £500 - £750 by value of improvements, Class C, were scattered throughout the town. The better ones were on the hill slopes towards the Town Belt, and sold for up to £1,000. The lower valued houses in this class were located amongst the lowest valued homes in the "flat" of North Dunedin (Fig. 27). They were generally box-shaped with seven or eight rooms, a verandah and one or two bay windows (Fig. 28). These wooden homes were rarely of two stories and very different

20. J. Stone and Co: op.cit., pp.1-79c.

21. S. George, et. al: Loc. cit.

DUNEDIN 1901

REPRESENTATIVE HOUSES FROM THE RESIDENTIAL CLASSES



SOURCE: S.George et.al: Dunedin Drainage and Sewage Board City of Dunedin Plans.

Fig.28.

from the three groups already considered. Some of these houses had only earth closets, and baths were rare.⁽²²⁾ Sections were only a quarter of an acre, and houses were set back from the pavements in orderly rows. They were the homes of teachers and office workers.

The last two groups, £250 to £500 and £0 to £250 by value of improvements, Classes D and E respectively, included the great majority of the housing in the City Sub-region in 1901 (Fig. 27). While these are low value classes this did not mean that the houses were necessarily of poor quality. Many were relatively new and well kept. However, neither the new nor the old houses could overcome the crowded and drab environments in which many of them were situated.

Class D was composed of five and six room dwellings set on a fifth and a quarter of an acre. They were single storey weatherboard constructions with corrugated iron roofs. Most of them had a small verandah (Fig. 28). These properties usually had a little garden.⁽²³⁾ There was great variation in houses of Class D. Many of the houses in York Place in this class were nearer Class C. By contrast many of the Castle Street houses were nearer Class E.⁽²⁴⁾

The lowest Class E, included large areas of housing in Great King, Cumberland and Castle Streets (Fig. 27). Many of these three and four roomed cottages (Fig. 28), had a market value of

22. Loc. cit.

23. S. George, et.al: Loc.cit.

24. District Valuation Roll for the City of Dunedin 1901,
Valuation Dept., Dunedin, (Unpublished).

under £400. They were drab cream painted constructions often smeared with grime from the nearby industrial plants. There were no baths, and back to back earth privies were the only sanitary facilities.⁽²⁵⁾ Located at the bottom of valleys, or on the "flat" near the factories and engineering yards, the values reflect these poor sites. Many of these houses in Class E had under 800 square feet of living space.⁽²⁶⁾ They were little more than oblong boxes. There were no outbuildings apart from the earth closet at the bottom of the garden. They were in the main houses of tradesmen and factory labourers.

One of the remarkable features of housing in the City Sub-regions in 1901 was the rapid transition between low and high value residential areas (Fig. 27). This was a matter of site. High Street had housing of medium quality while that in Stafford Street was of poor quality. However, when it is realised that High Street was on the crest of a ridge and Stafford Street is in a gully, then the difference between the two areas is comprehensible.

Another feature of residential land use was the number of under-sized sections - under 14.69 poles.⁽²⁷⁾ There were over 1,000 of these scattered through the area within the Town Belt, the majority of which were on the "flat" in the North Dunedin area. Many of these were only six to eight poles. These under-sized lots considerably increased the density of housing.

25. S. George, et. al: Loc. cit.

26. Loc. cit.

27. Personal Communication, Mr. Boxall, Valuation Dept., Dunedin, 1960.

Density, value, and site were closely correlated.

Population was of greatest density and housing of lowest value on the "flat" near the industrial areas and the harbour, and in the valleys running down from the Town Belt. The residences of highest value were on the hill crests, where the population density was also the lowest. (Cf. Fig. 2, Fig. 10 and Fig. 27).

The number of terrace or row houses was a distinctive feature of the residential area in the City Sub-region (Fig. 29). They were large structures of three and more units often two storied, and nearly always built of brick. Located in the areas of lower values, they provided accommodation for about 10/- a week. That this type of dwelling should be a feature of Dunedin and not of other centres calls for some explanation. The terrace or row house was a common feature of industrial England and Scotland. Their great advantage was that they could be built in extensive "rows" (hence the name) without the waste of space that always occurred with individual units. There was also a saving in materials as fewer dividing walls were necessary. It seems possible that this type of dwelling was transplanted for the worker in the colony. Moreover, not only had the labourers from Glasgow or the Scottish mining villages lived in this type of dwelling, but employers and builders had been accustomed to providing such housing.⁽²⁸⁾ This may explain

28. R. Miller and J. Tivy (Ed.): The Glasgow Region, Glasgow, 1958, Plate XVlll.

DUNEDIN 1901 CITY SUB-REGION TERRACE HOUSES

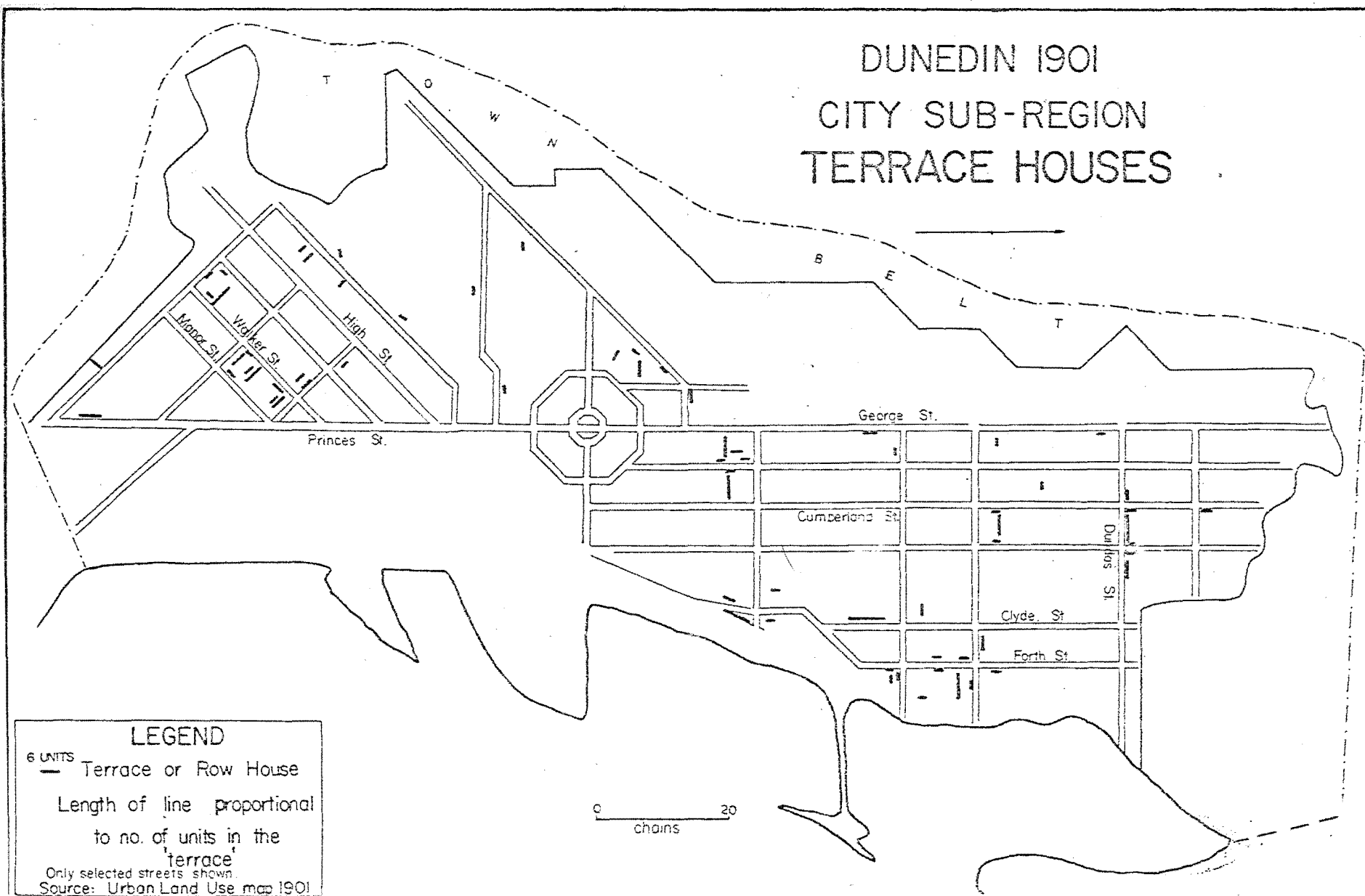


Fig. 29.

them as a feature of Dunedin, and not of Christchurch whose settlers came from the south of England, where this type of housing was not as extensive as in the Midlands and in Scotland. Further explanation is provided by a consideration of the building materials. These units were usually built in brick. A supply of clay for brick-making was readily available and this industry was among the earliest developed. The early establishment of Dunedin as an industrial centre may also have influenced the development of row housing as a means of high density accommodation. These factors which possibly explain this distinctive architectural feature do not however, lend themselves to quantitative measures, and thus these observations must remain as suggested explanations only.

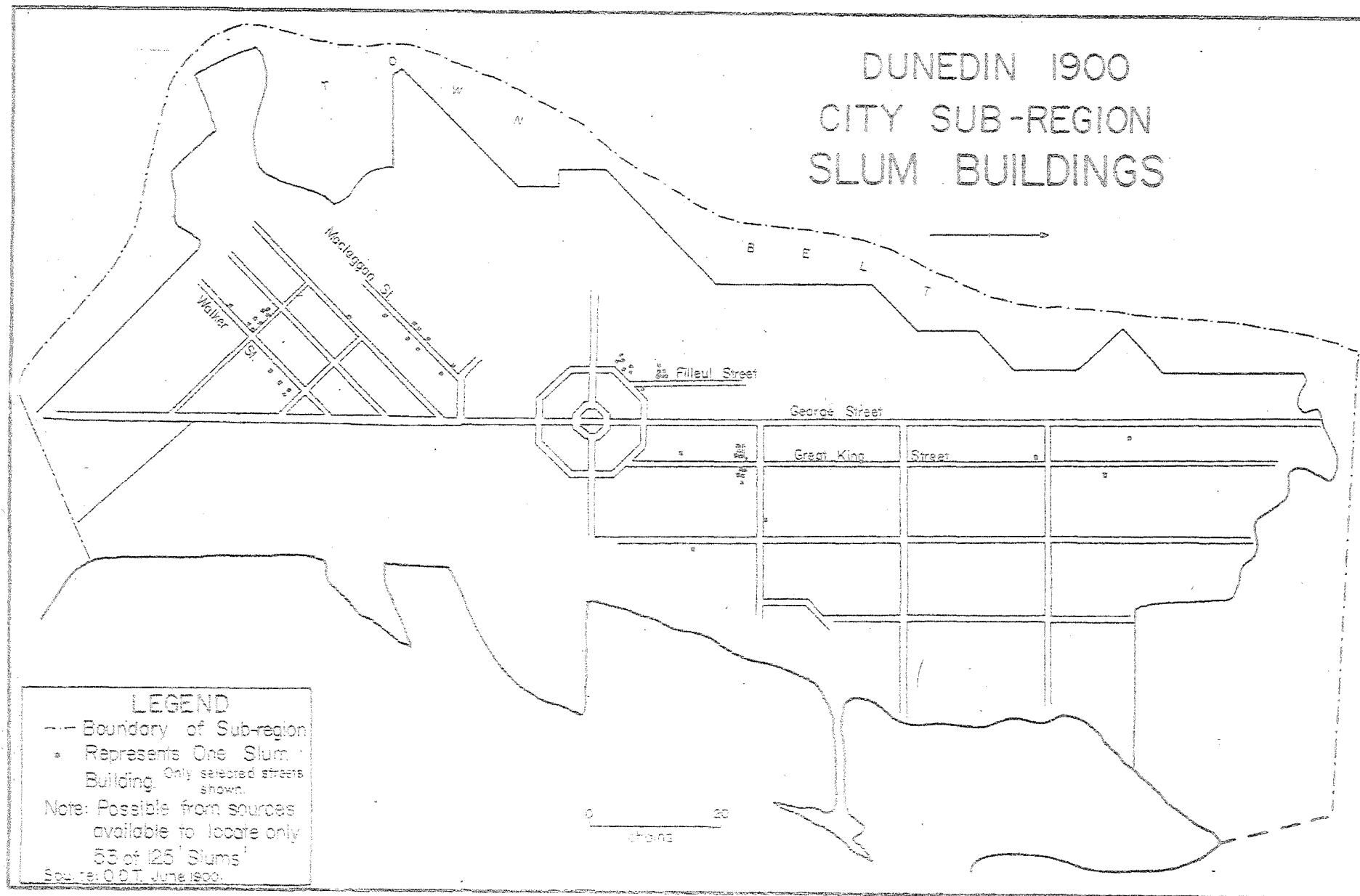
Inspector Donaldson reported 125 insanitary buildings scattered throughout the city (Fig. 30).⁽²⁹⁾ These were due not so much to the age of the buildings as to the condition to which they had been allowed to deteriorate. Moreover a housing shortage in Dunedin at the turn of the century was in no way relieving the pressure on dwellings.⁽³⁰⁾ But the city corporation was spurred to action by the plague epidemic. As a result of the survey of housing conditions, several dwellings were condemned.⁽³¹⁾ While an article stated that there were no tenement houses with several families occupying the one unit,

29. Much of this information and the definition of a slum comes from two newspaper articles - "A Tour through Dunedin's Slums" - Otago Daily Times, 8th and 13th June, 1900. A slum was defined by the inspector of health as a decayed and insanitary building.

30. Otago Daily Times, 27th June, 1900.

31. Ibid., 9th June, 1900.

DUNEDIN 1900 CITY SUB-REGION SLUM BUILDINGS



the threat of overcrowding was imminent.⁽³²⁾ It is notable that these slums were largely occupied to a large extent by Chinese, and in other cases by a "class of people requiring much police surveillance."⁽³³⁾

The slums made up only 3 percent of all the buildings within the Sub-region, but they had an influence out of proportion to their number. Not unnaturally they soon contaminated buildings nearby and they were also virulent breeders of disease. The character of these structures was the same all over the sub-region. A description of one locality could well apply to any other. In a right of way off Filleul Street....

"a terrace of half a dozen two storied brick buildings (faced with concrete) is erected parallel with a brick wall. At the back, six feet of space separates the buildings, and in this sunless alley six privies connected directly with the sewer and untrapped emit a pestilential odour. The apology for a back yard (which is much too confined and narrow to swing the proverbial cat) is paved with bricks. These, however, are subsiding, and into what the reporter did not care to examine too closely. These houses are occupied by poor people and although in a very bad state, they complain that the owner cannot be induced to improve them, until compelled by law." (34)

The problem in many cases was how to compel the owners to improve their properties. The paper quoted several as resisting the efforts of the council to clean up the city.

It was not only houses which were condemned, factories, sheds, and chinese laundries were included also. "A shed at present used for the storage of timber, will probably fall down

32. Ibid., 27th June, 1900.

33. Ibid., 19th April, 1900.

34. Ibid., 8th June, 1900.

when the timber is taken out." (35) The buildings were unpainted and covered on the outside with fungus, grease and dirt.

There were two areas of concentration of slum buildings in Walker and Stafford Streets, and in Great King Street (Fig. 30). It was in the Chinese occupied area in Stafford and Walker Streets that the paper reported the worst slums; although the places hitherto mentioned were all unfit to live in, they were, many of them, good in comparison to the Chinese quarters in Stafford Street. Several of these buildings passed as boarding houses. They were characterized by - tiny rooms, narrow dark passages, and endless rotten stairways. (36)

"The exploration of the whole occupied sometime. Everywhere the same offensive atmosphere was encountered, the only variation being that it was thicker in some places than in others. Leprous looking paper, stained and mildewey with damp, peeled from the walls, grime and grease blackened the ceiling, while a warm sickening smell from the cookhouses poured through the dingy passages." (37)

In the northern part of the town, Great King Street seems to have had more than its share of slum dwellings (Fig. 30). Numbers of these were hidden at the end of alleys, "where the timber never saw paint, and is now rotten and windows with half the panes gone are partly stuffed with rags and paper." (38) Living conditions were made worse by the stables and the poultry farming located in the midst of the highest density housing. For these miserable living conditions the occupants paid at least 8/- a week.

35. Loc.cit.

36. Loc.cit.

37. Loc.cit.

38. Otago Daily Times, 13th June, 1900.

The health inspectors' report and action by the council stimulated many of the "slum dwellers" to patch up their homes. The worst slums were pulled down and already in mid-1900, several of the buildings in Stafford Street had vanished.⁽³⁹⁾

Land uses other than residential outside the central business district were in the main, areally insignificant. The only exception was a concentration of industrial and commercial land use along the northern end of Great King Street. It may have developed in response to the main route out of the town to the north. In 1901 the tram turned off George Street and travelled along Great King Street, to the North-East Valley. Along this route were retail premises supplying food and clothing and industrial units carrying on light manufacturing. This included printing and stationery manufacture, upholstering, cabinet making, coach building, and confectionery manufacture.⁽⁴⁰⁾ A short distance away was the only large establishment, the brewing firm of McGavins. This commercial core supplied many of the residents of North Dunedin with their daily supplies.

Functionally, the corner store and dispersed industrial units were of great importance. Corner shops were not well distributed. While there were many on the "flat" there were few on the hill slopes to the west of the central business district. They were characteristically shop and house combined, and were operated by the owner who seldom employed help. There

39. Loc. cit.

40. J. Stone and Co: op.cit., pp. 33-39.

were doctors, music teachers, elocution teachers, and other professional units also scattered throughout the residential area of the Sub-region. They could be distinguished from the other residences by the small name plate attached to the front gate - A.Aitken, teacher of pianoforte, or Martin Robert, Surgeon. (41)

As a Sub-region, Dunedin City, made up of a commercial core and surrounding residential area, was well served by transport and by recreational facilities. As the largest and most compactly settled sub-region with a population of over 24,000 this is not surprising, but is rather to have been expected. However, the streets, water supply, and sewage posed difficulties yet to be solved. The lack of co-operation between sewage engineers and Harbour Board authorities raised unnecessary difficulties. Administrative services were well developed. This was mainly because most of the services had their central offices in this sub-region.

The Sub-regions outside the Town Belt.

The central business district supplied a wide variety of needs for the whole Urban Region as well as supplying the Sub-region within the Town Belt. The sub-regional shopping centres, however, catered almost entirely for local demands. Foods, hardware, and various kinds of clothing were the main articles offered for sale. In contrast with the central core, they had

41. J.Stone and Co: op.cit., pp. 1-79c.

few, if any professional establishments. Each sub-regional unit had a distinctive combination of factories, shops, houses, and community facilities.

South Dunedin

The largest of these sub-regions of shops, factories, and houses outside the Town Belt, was South Dunedin. (Plate VIII and Fig. 31). The commercial centre of this Sub-region had grown up at the junction of two tram routes - the Ocean Beach and the Caversham Valley lines. Both served densely populated areas. Thus, the commercial centre was situated at a strategic point. Hillside Road was the main business thoroughfare of this core. Here were the various food, clothing and hardware stores that characterized all suburban shopping centres. However, food stores predominated as 18 out of the 45 dealt with food.⁽⁴²⁾ Despite the lack of commercial and professional offices the South Dunedin centre was a miniature replica of the central core for located within it were the borough administration offices and Town Hall, with the post office nearby. The presence of the administrative buildings indicated the regional nature of South Dunedin. The post office was the centre for mail deliveries in the district, while the Town Hall was the focus of local community activity and local administration. Clearly distinguished by its two-storey buildings the commercial core stood out above the surrounding sea of houses.

42. H. Wise and Co: New Zealand Post Office Directory 1902, Dunedin, 1902.

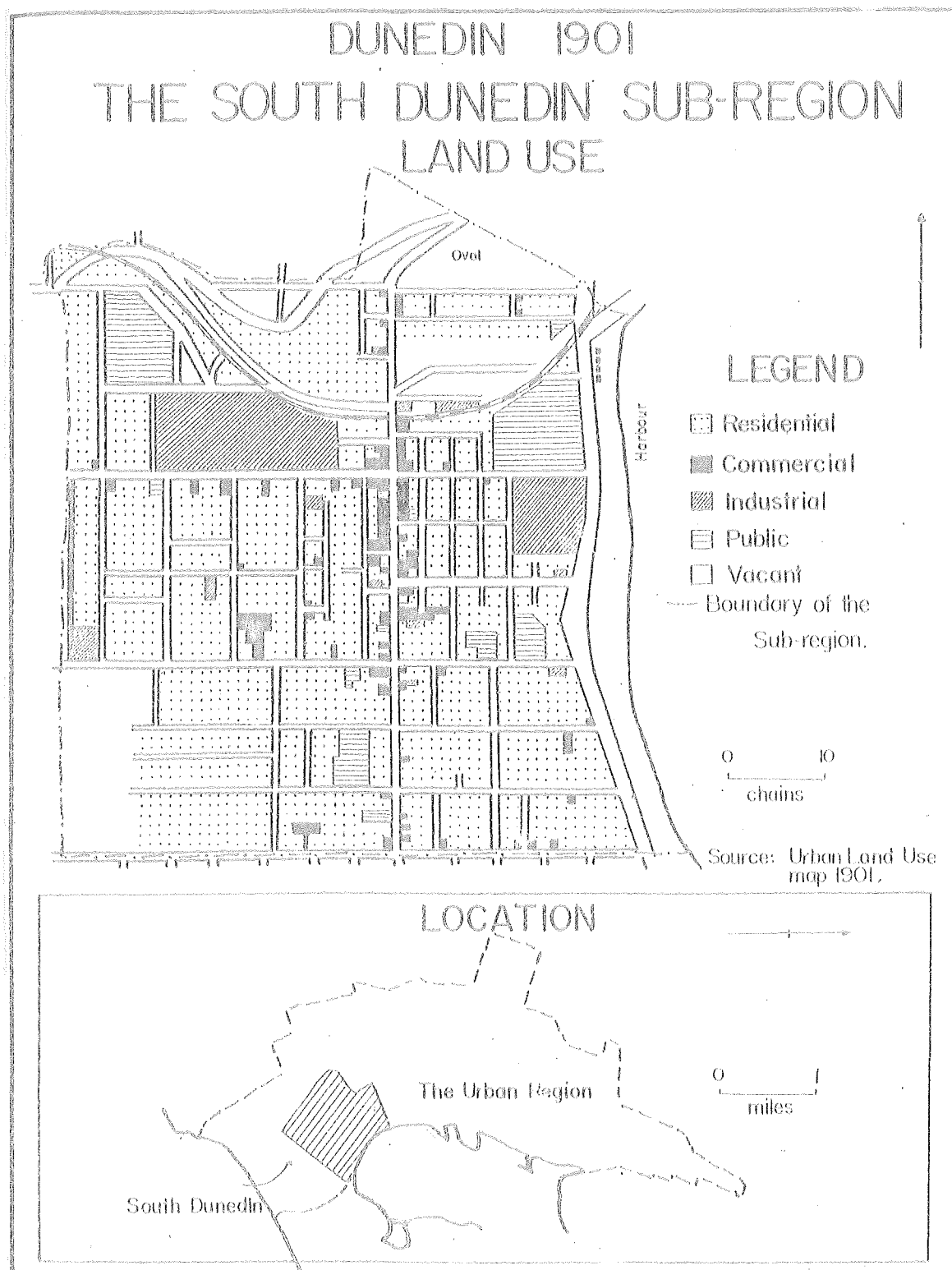
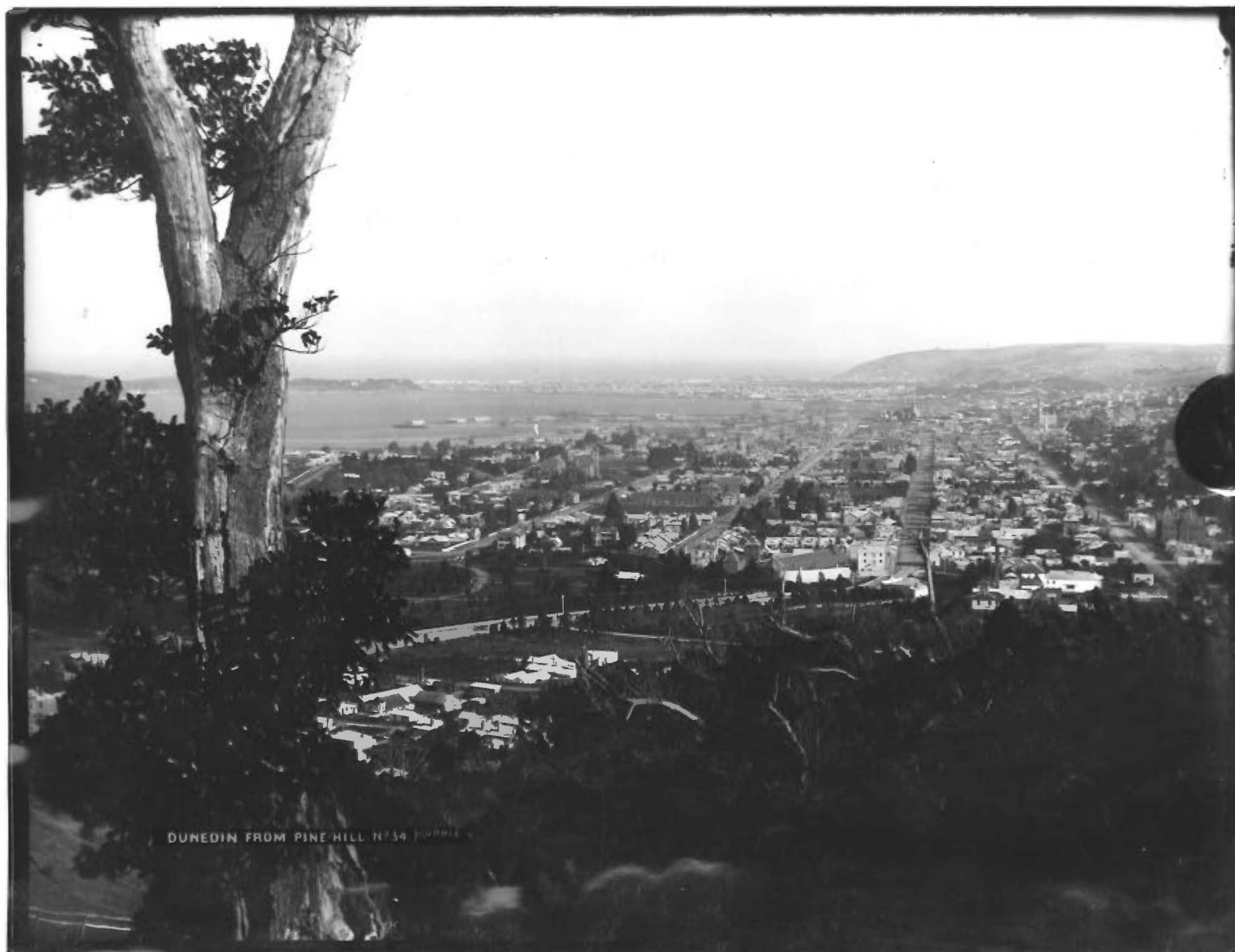


Fig.31.

Plate Vlll

The Suburbs of South Dunedin, St. Kilda, and St. Clair: Although distant, the suburbs of South Dunedin, St. Kilda, and St. Clair, show up in this view of Dunedin from Pine Hill. The large area of vacant land between St. Kilda and St. Clair can be seen (arrow). On the hill above St. Clair is Cargill's Castle a well-known landmark.



DUNEDIN FROM PINE HILL N° 34. 1907.

Factories in South Dunedin were located predominately in the commercial core and along the railway line. However, this Sub-region was in no sense comparable in the number, size, or diversity of types of factories with the central industrial areas. In South Dunedin there was a rope and twine factory, a fruit cannery, a box factory and a furniture workshop. There were also, several small industrial establishments. It was not from these factories that the industrial character of this Sub-region was derived. The industrial structure of South Dunedin was dominated by the heavy locomotive works and gas manufacturing plant. Both of these were situated on the railway line which ran through South Dunedin. The Hillside workshops not only manufactured everything required for the railway section between Oamaru and Bluff, but were "often-times engaged in manufacturing material for other parts of the colony."⁽⁴³⁾ With a staff of 425 in 1901,⁽⁴⁴⁾ the workshops were able to produce large quantities of rolling stock varying from axles to locomotives. The workshop specialized in making railway wheels. It was a large factory and covered six acres. The noise, smoke and grime from the factory however, polluted areas far beyond the immediate vicinity. The gas works, with only 35-40 employees, was the other dominant industry of the Sub-region. Gas was piped to the City Sub- region for lighting, heating and various industrial purposes.

43. Otago Daily Times, 27th July, 1899.

44. Report of the Dept. of Labour: Appendices to Journals, House of Representatives, (H/11), 1901, pp.36-42.

South Dunedin was a district that was notable at that time for the high percentage (approximately 90 percent) of dwellings of very low value (Fig. 27). Over 50 percent of the houses were three and four roomed cottages. These were closely packed on to small lots of 20 poles or less. In fact, South Dunedin had some of the highest population densities in the Urban Region (Fig. 10). The blocks on either side of the commercial core had densities of over 300 per square acre. The correlation between high density and low value of houses is strikingly revealed in South Dunedin. Eightyseven percent of the houses were of wooden construction with corrugated iron roofs.⁽⁴⁵⁾ The Sub-region also acquired distinctiveness because the only 'row houses' not in the City Sub-region were to be found in its dingy alleys.⁽⁴⁶⁾

With over 5,000 people, South Dunedin was the largest Sub-region outside the Town Belt in the Urban Region. Three primary schools, each taking between three and five hundred pupils, catered for the education needs of the local children. The only recreational areas for this densely populated sub-region, were the Carisbrook Sports ground and the Caledonian ground.

St. Kilda.

St. Kilda to the south of South Dunedin was a Sub-region of quite different character. Large tracts of vacant land,

45. Census of the Colony of New Zealand 1901, Wellington, 1902, pp. 22-23.

46. Two of these were noted during fieldwork, and verified as built before 1901.

DUNEDIN 1901 THE ST. KILDA SUB-REGION LAND USE

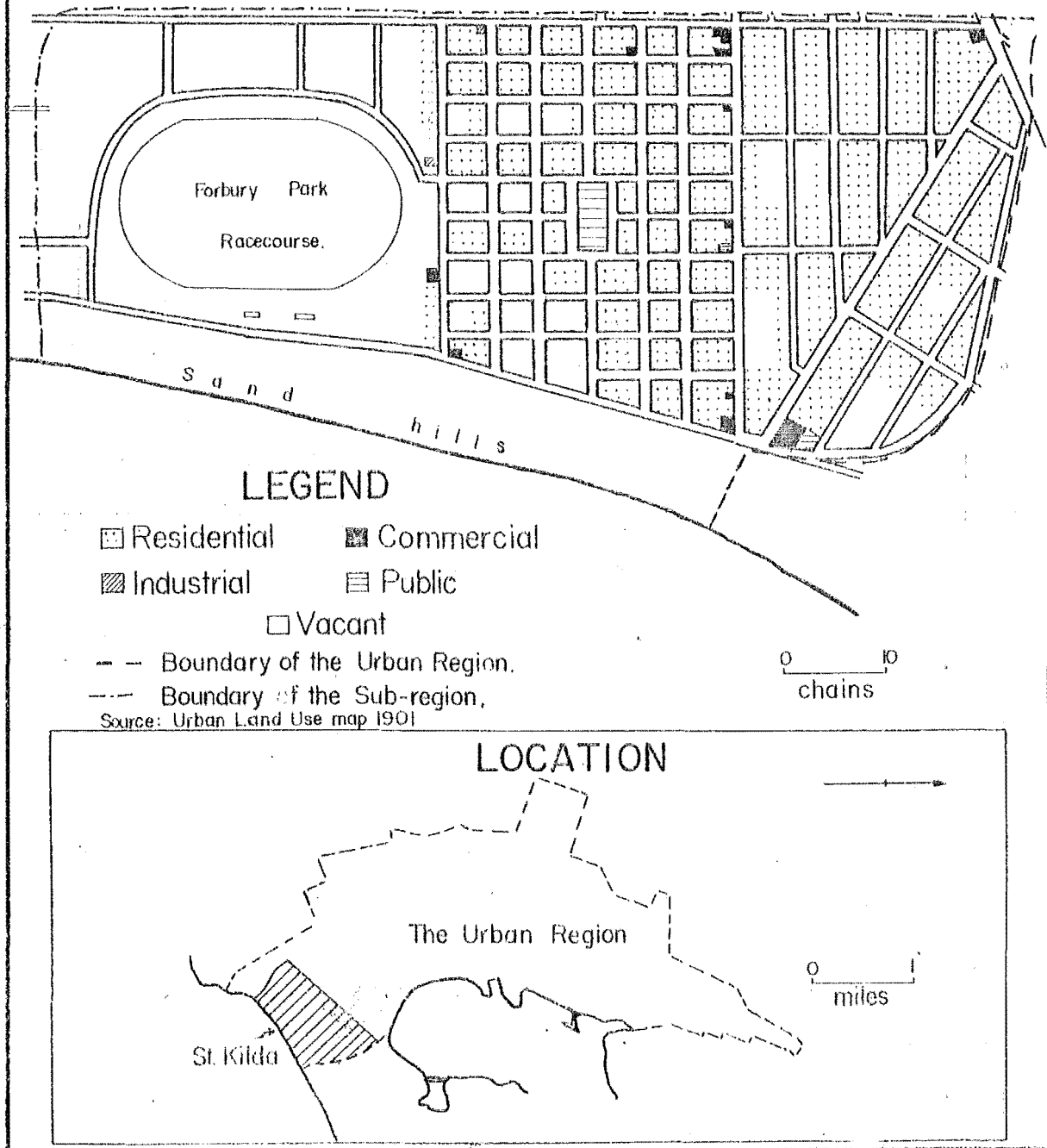


Fig.32.

still un-subdivided were a feature of the Sub-region (Fig.32). Only half the area of St. Kilda was built on. Even so, it was a residential Sub-region. Approximately half the dwellings were valued between £250-£500 by value of improvements, that is Class D (Fig. 27). There were also some 12 residences valued between £500-£750, Class C. While the majority of the houses had five or six rooms, the more expensive homes had 10 or 12, and were set in spacious grounds. These properties had extensive outbuildings and stables but were in no way comparable with the grand dwellings of the City Sub-region.

As the dwellings in Class E, the lowest class, had at least a quarter of an acre, and there were also many vacant sections, these homes did not have the crowded appearance of those in the City or in South Dunedin. They were similar to the square structures of the City, but they were on the whole newer than in other parts of the Urban Region. A regular tram service enabled the residents to travel to work in the City, or South Dunedin.

Commercial development was confined to five shops, four hotels, and a tea rooms. Two of the hotels, the tearooms and a shop were situated at Ocean Beach to profit from those people using it as a seaside resort. Four general stores provided for local customers. A claypipe works and a woodware factory were the only industries.

The St. Kilda Sub-region included one of the most important amusement facilities in the Urban Region. Horse racing in Dunedin was centred at Forbury Park where there was a large course suitable for both galloping and trotting meetings (Fig.32).

Two large grandstands were provided for the spectators.

Tahuna Park, just outside the Urban Region on the sandy land south of Victoria Road, was the centre for the annual show of the Agricultural and Pastoral Association.

The Town Hall was the community focus of the Sub-region. There was no church or school in St. Kilda and most of the residents worked outside the Sub-region. However, St. Kilda gained its distinctive character from the amusement and recreational facilities it offered.

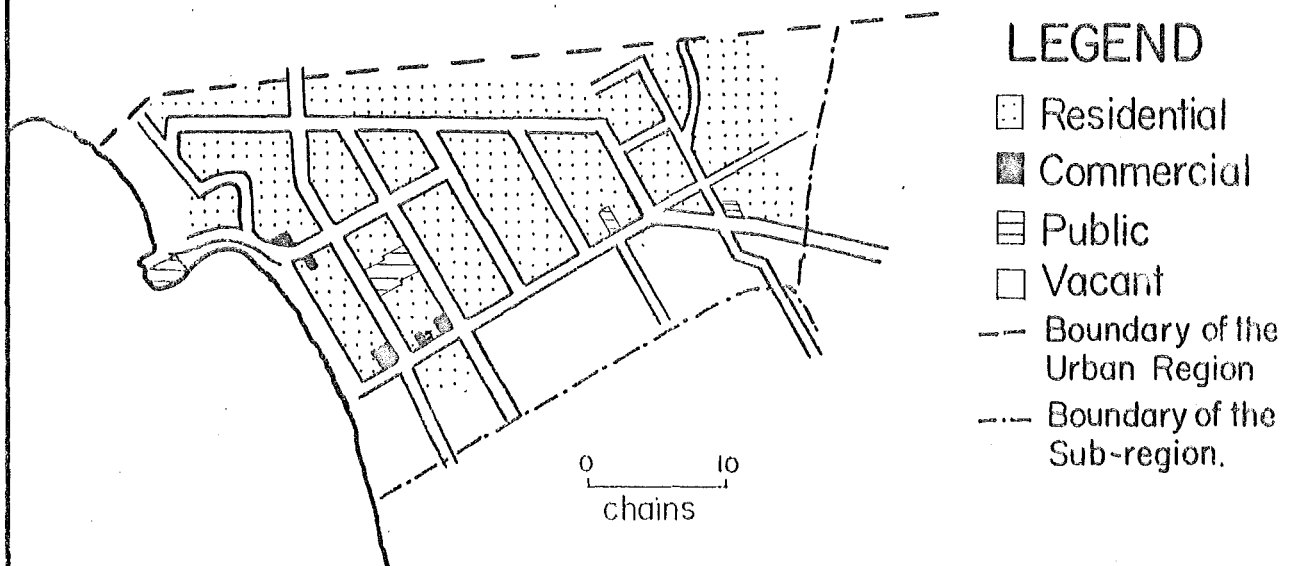
St. Clair.

Although part of the Caversham Borough for the purposes of administration, the St. Clair Sub-region (Fig. 33) had both a distinctive character and function.

St. Clair was conspicuous for beautiful residences - the suburban homes of wealthy businessmen. Set in surroundings of trees and gardens, many of these properties cost more than £2,000. The improved values ranged from £500 to £1,000 (Fig. 27). Many of these were equal to the finest City residences of Heriot Row and York Place. There were several two storey mansions of 10 and 12 rooms, with ornate facades, large balconies, and intricate wrought iron verandahs. Most of the residents in this Sub-region had their own stables, even though there was a regular public tram service to the City. The Directory lists fifteen, managers, accountants, and lawyers, who had their residences in St. Clair.⁽⁴⁷⁾ This was also a popular suburb with the older

47. J.Stone and Co: op.cit., p.87.

DUNEDIN 1901 THE ST. CLAIR SUB-REGION LAND USE



Source: Urban Land Use map 1901.

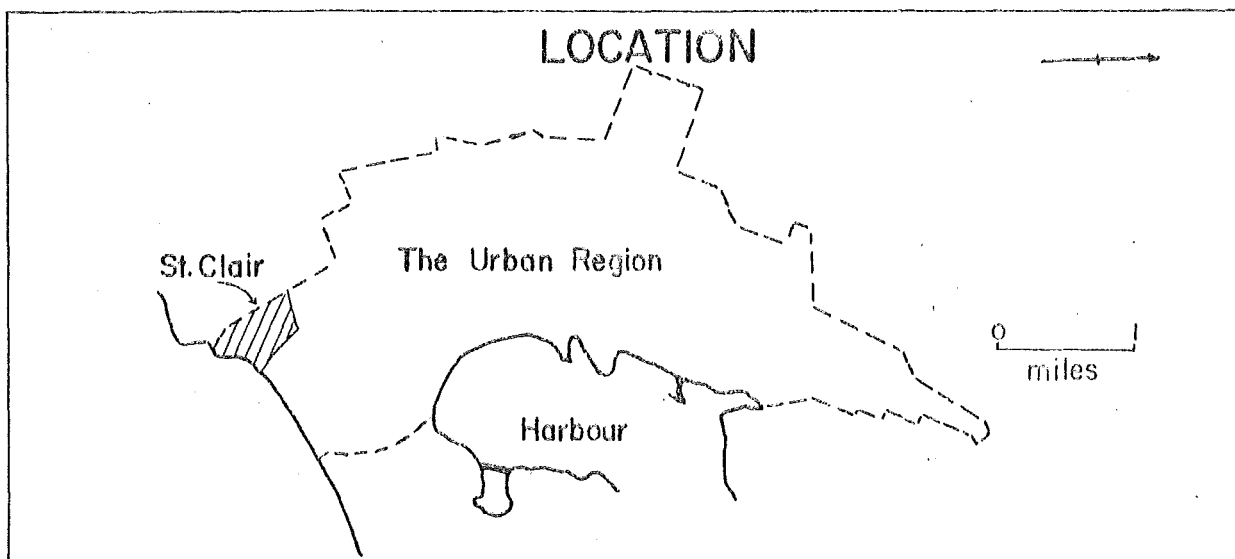


Fig.33.

wealthier citizens of Dunedin who had retired from active life in the City.⁽⁴⁸⁾ Three stores and a refreshment rooms were grouped near the beach. There were certainly more shops than were necessary to serve the local population of about 1,100. The shops were rather a reflection of the suburb as a recreational centre. The beach with the salt water baths was one of the most popular seaside resorts around Dunedin.⁽⁴⁹⁾

There were few opportunities for employment within the Sub-region and most of the residents travelled to the City to work. With school and churches however, the Sub-region was a small community unit.

Caversham.

Caversham was joined in the south and east by the St. Clair, St. Kilda and South Dunedin Sub-regions and by Mornington in the north. It was a Sub-region similar in character to South Dunedin. There were the same closely built up areas of low quality cottage housing, and an important regional shopping centre, developed this time at a tram terminus. Moreover, there were several large industrial establishments located in the Sub-region (Fig. 34). There was however, a significant amount of vacant land within this Sub-region, (particularly near the boundary of the Urban Region). Housing densities were high along Hillside Road and the Main South Road, but away from these

48. The Cyclopedia Co. Ltd: op.cit., p.408.

49. Loc.cit.

routeways there were large areas of open land (Fig. 34).

Two areas of contrasting housing values were located within the Sub-region. Low quality housing (under £250 - Class E) was to be found along Main South Road and the railway, and near the Caversham gasworks (Fig. 27). Some blocks had a few larger houses that were valued up to £500. The smaller cottages, smeared with grime from the gasworks and railway, were jammed together with very poor sanitary arrangements. The population had to depend on earth privies and on an unreliable night-cart service. The occupants of these dwellings probably worked in the local industries, on the railway, or took the tram each day to the industrial areas of the City. A small but distinctive area of higher class residences was located west of Forbury Road - at "Kew". As at St. Clair they were owned by Dunedin business and professional men. They were similar both in construction and in value to the St. Clair homes.

The main retail and commercial area was along Caversham Valley Road and Main South Road (Fig. 34). The shops, as in other sub-regional cores were less specialized than those of the central business district, and offered a wider range of goods. Services were more extensive. Local bakers, and grocers delivered their goods in "spring carts". Blacksmiths, wood and coal merchants, confectioners, butchers, fruiterers, watchmakers, and the ubiquitous boot-maker were all represented in this embryonic shopping centre. Although commercial premises were not generally a feature of sub-regional shopping centres in 1901, one insurance company had an agent in the Caversham centre. This junction of Caversham Valley Road and Main South Road was the

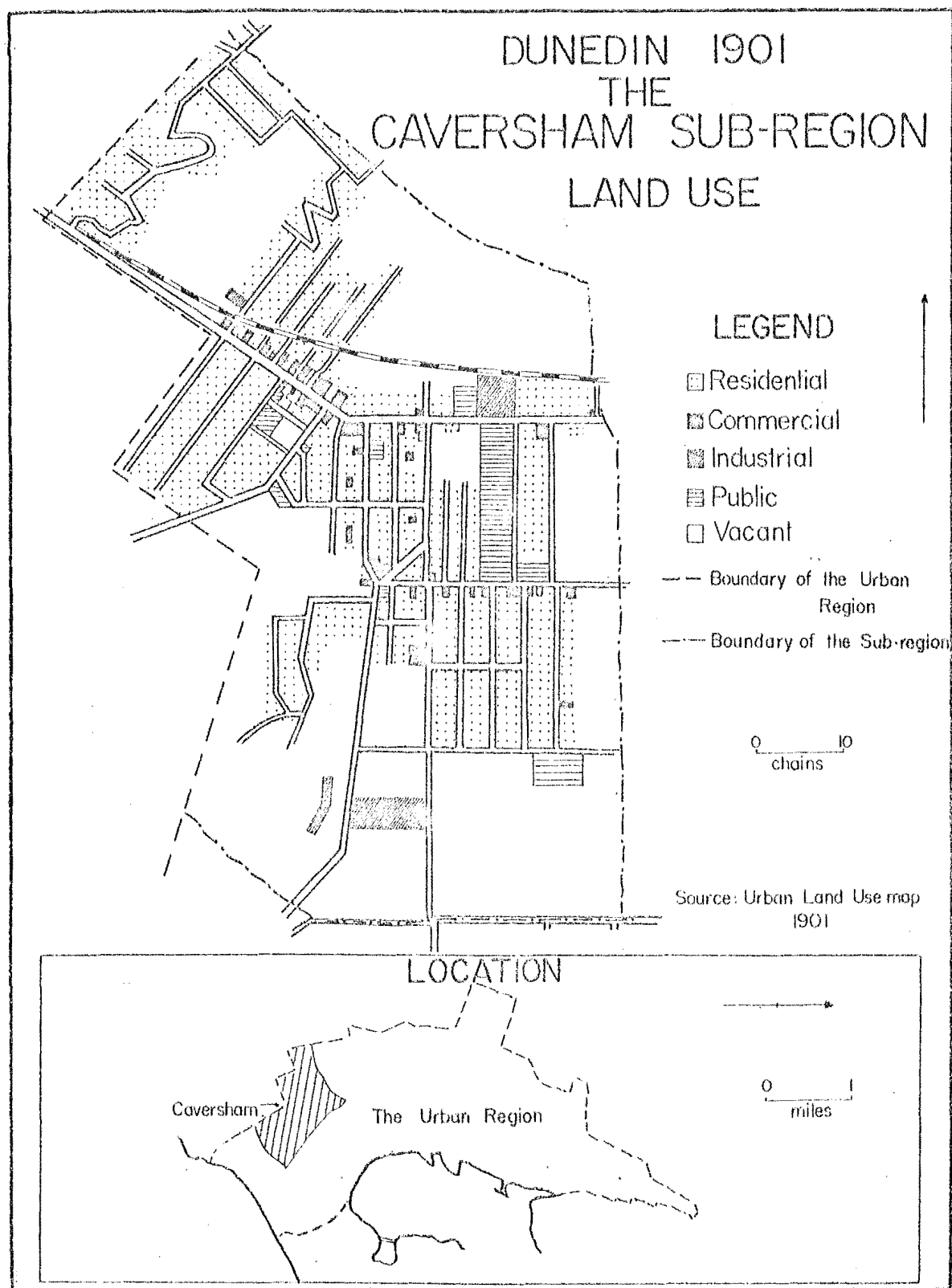


Fig.34.

community centre for Caversham. The Town Hall and administration offices were situated in College Street just off the Main South Road, and a public hall was located on Main South Road. There were both Presbyterian and Baptist Churches in this centre. One of the two schools in the Sub-region was also situated there. Caversham railway station, north of the shopping centre, supplied one of the transport links with the City. The other was a regular tram service.

There were 10 food, clothing and general stores in Cargill Road to supply the large number of people living near this route-way (Fig. 39). The "shoestring" form of this shopping area suggests that it developed with the growth of the routeway.

Caversham was noted for the Otago Benevolent Institution, erected on eight acres at the corner of Alexandra Street and Main South Road. It was a three storey brick building and provided accommodation for 300 aged and infirm.⁽⁵⁰⁾

Industrially the area was not as important as the South Dunedin complex. Moreover, it had a decidedly different character. Apart from a slight concentration along Main South Road and railway line, the factories tended to be scattered throughout the Sub-region (Fig. 39). Two stone quarries and a brick-works gave the Sub-region its distinctive industrial character. They were located near the Urban boundary.

Confectionery and match factories, and two breweries were other local industries. Although these factories used local labour

50. The Cyclopedia Co. Ltd: op.cit., p.149.

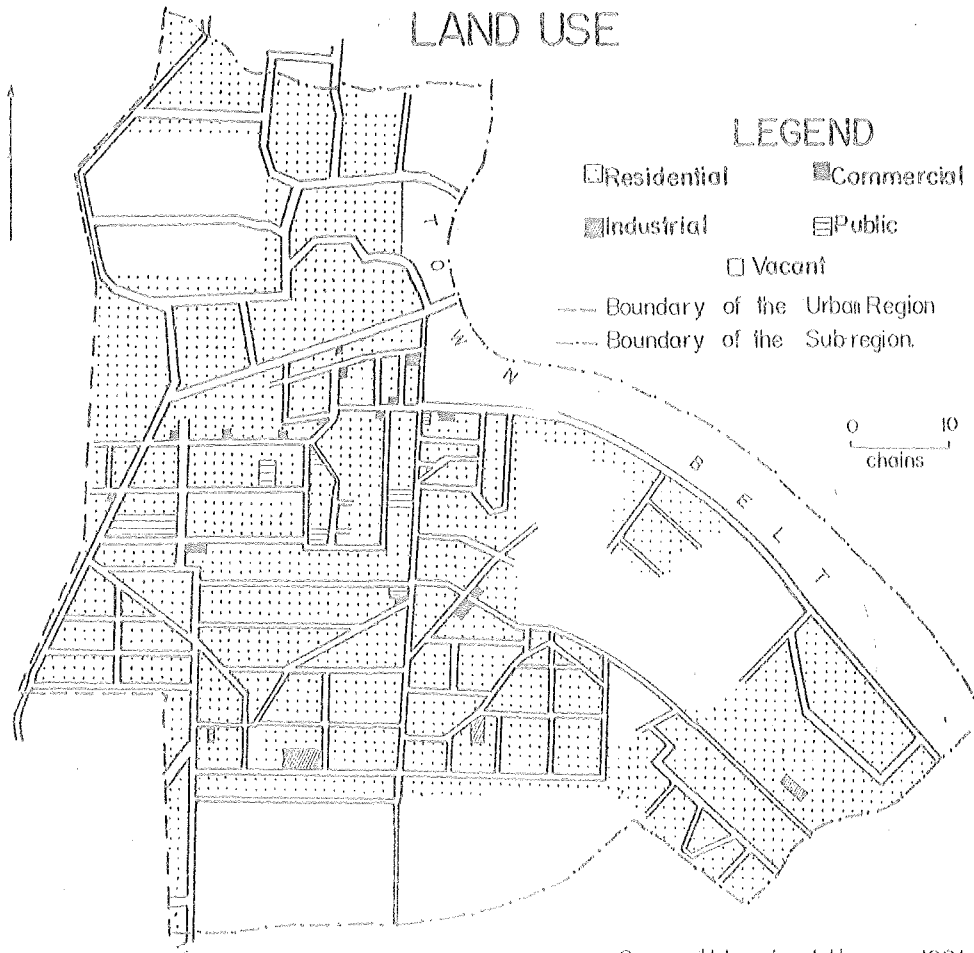
they could not provide all the employment for this large Sub-region of 3,000 people.

Mornington.

Mornington was one of two sub-regions situated on the hill slopes above the City. There were almost no industries within the Sub-region - it was a residential suburb (Fig. 35). The attractive view from the hillslope site across the City and harbour gave Mornington an advantage not possessed by the other Sub-regions. Because of the fine view many wealthy businessmen had erected homes in this suburb, especially in Eglinton Road near the Town Belt (Fig. 27). Some of these properties brought as much as £6,000 when they changed hands on the open market. Improved values were amongst the highest in the Urban Region (Fig. 27). The larger two storied homes had extensive grounds covering an acre or more. At least 25 percent of the residences ranged in improved value between £500 - £1,000 (Class C and B) - comfortable homes of small factory owners, accountants, and businessmen. Away from the Town Belt the housing was of a very mixed nature. Mornington was one of the earliest areas outside the Town Belt to be settled. There were some areas of close sub-division where rows of monotonous wooden houses were sited only a few feet from the pavement. The houses in the Haig-Henderson Street block were built on less than one fifth of an acre and were valued under £250, (by value of improvements) the lowest class (Fig. 27).

Most of the working population travelled outside the Sub-region to the City or to Kaikorai Valley to find employment.

DUNEDIN 1901 THE MORNINGTON SUB-REGION LAND USE



Source: Urban Land Use map 1901

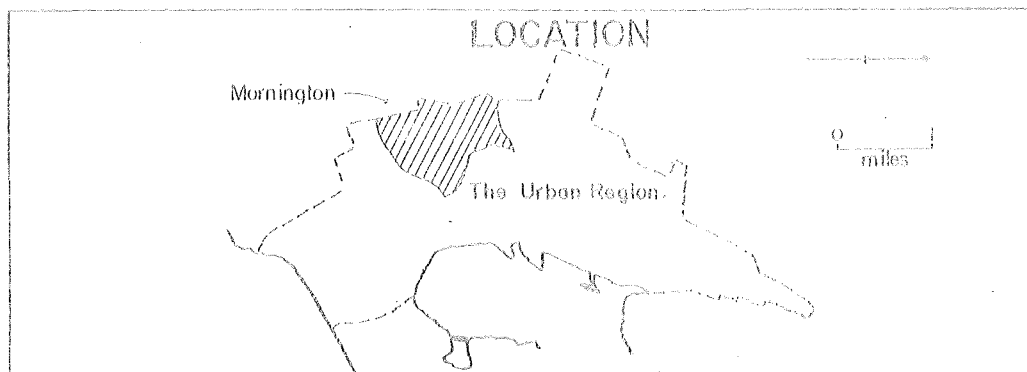


Fig. 35.

(In the Valley they were employed in the Roslyn Woollen Mills). This daily movement was made possible by a frequent cable tramway service to the City, and an extension line along the hill-top. A boot factory and a nursery supplied the only employment within the Sub-region other than the few commercial establishments.

Unlike South Dunedin and Caversham, Mornington had no well developed commercial and community centre. Apart from five stores in James's Place and Glen Avenue, and the Council Chambers in Argyle Street, there was nothing that could be properly called a commercial centre. The only hotel was near the terminus of the cable tramway. There were, however, more than a dozen corner stores (Fig. 35). These shops supplied day to day needs. They were a feature of the Mornington Sub-region. Four churches and their church halls were the focus of social activity in Mornington.

There was a private as well as a public primary school, and a public library. Several musical societies, including a brass-band "upheld the prestige of the borough with respect to music".⁽⁵¹⁾ Parks and recreation areas were notably absent. The Sub-region was cut off from the Caversham area by a large enclave of vacant land on the steeper hill slopes above the Caversham Valley. The rest of the Sub-region however was uniformly settled.

51. The Cyclopedia Co. Ltd: op.cit., p.410.

Roslyn-Maori Hill.

Roslyn-Maori Hill was largely a residential Sub-region, with a commercial and community core at the junction of High Street, and District, City, and Kaikorai Valley Roads (Fig. 36).

Maori Hill was an administrative borough and most of it was outside the Urban Region in 1901. However, the older residential core of the borough was within the Roslyn-Maori Hill Sub-region; the only block of poor quality housing in the Sub-region.

Roslyn-Maori Hill had the most compact area of houses valued predominantly between £250 - £1,000. There was also an extensive area of housing valued over £1,000 and a more confined area over £2,000, by value of improvements. The higher values were along the Town Belt, with the highest in District Road (Fig. 27). These 'mansions' had large gardens, often as much as two acres in extent. The magnificent view across the City and harbour to the hills of the Peninsula made them even more attractive. The housing styles were particularly individualistic, a refreshing change from the rows of drab cottages in South Dunedin and Caversham. Even those houses valued between £250 - £500 were by value of improvements usually nearer £500.⁽⁵²⁾ Excluding the old core of Maori Hill 30 percent of all the dwellings in the Sub-region had more than six rooms.⁽⁵³⁾ The higher class residences were separated from the other houses by small areas of vacant land.

52. District Valuation Rolls for the Boroughs of Roslyn and Maori Hill 1901, Valuation Dept., Dunedin, (unpublished).

53. Census of the Colony of New Zealand 1901, Wellington, 1902, pp. 22-23.

DUNEDIN 1901 THE ROSLYN-MAORI HILL SUB-REGION LAND USE

0 10
chains

LEGEND

- ▤ Residential ■ Commercial
- ▨ Industrial ▤ Public
- Vacant.

- Boundary of the Urban Region.
- Boundary of the Sub-region.

Source: Urban Land Use map 1901

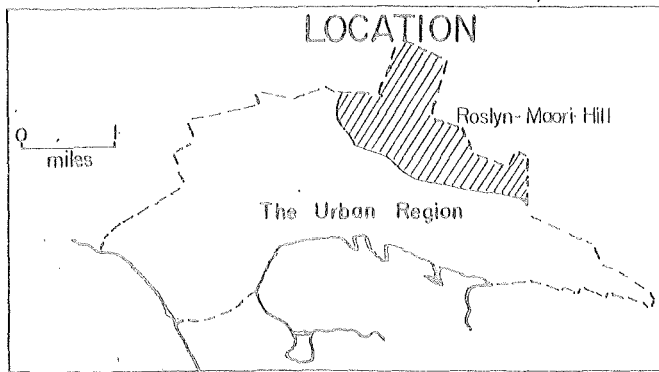
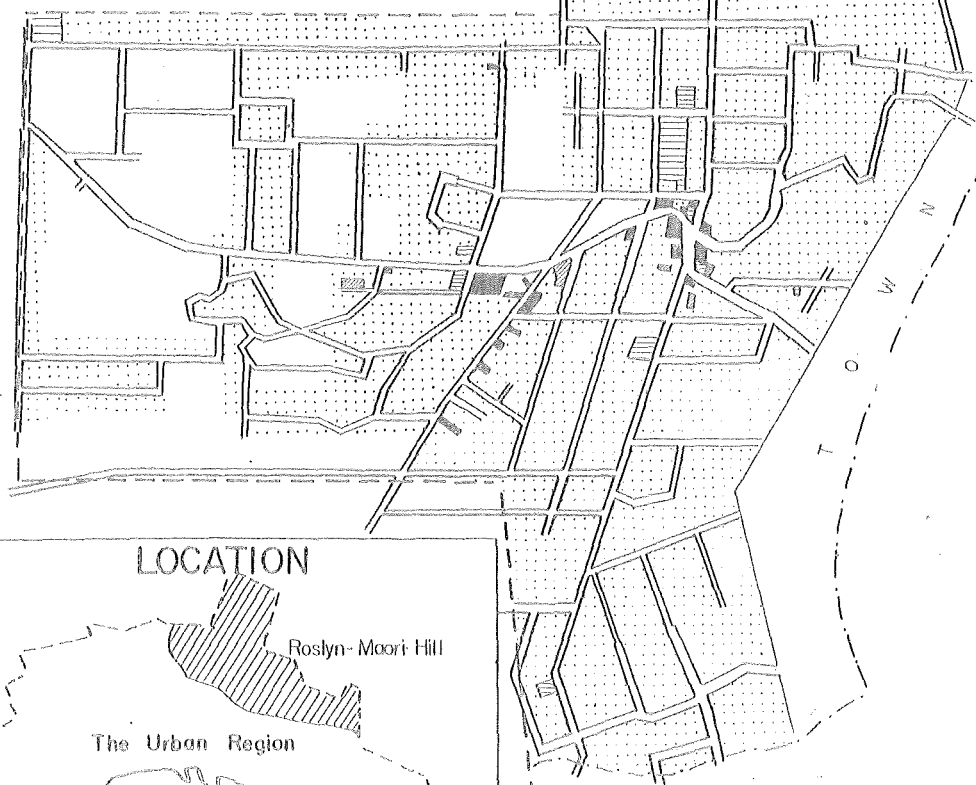


Fig.36.

The density of housing thinned considerably northwards towards Maori Hill, and to the west near the boundary of the Urban Region. However, the sprinkling of houses in the west indicated that the town was expanding. These cottages - they were no more - were separated by large vacant sections as yet uncleared of scrub and gorse.⁽⁵⁴⁾ Several houses were being erected. As most of the houses in the Sub-region were above the water reservoirs, they had to rely on any rain water that could be collected.

Where High Street, City, District and Kaikorai Valley Roads intersected there was an assortment of retail, commercial, industrial, and public, land uses (Fig. 36). Apart from a few corner retail stores all the non-residential land use was concentrated in this area. As well as the Town Hall, administrative offices, two churches, and a school, there were 26 retail stores, three industrial establishments, and two warehouses. The retail stores were scattered along the intersecting streets, and included the usual grocers', butchers' fruiterers', drapers', fancy goods' dealers, and boot-makers. The industries - a smithy, a building contractor and a boot factory were all small establishments.

Besides the industrial units already mentioned two other factories manufactured furniture and hosiery. The Roslyn Woollen Mills, a flock manufacturing works, a chair factory and a fell-mongery in the Kaikorai Valley outside the Urban Region provided

54. Otago Daily Times, 13th November, 1901.

Roslyn-Maori Hill with a substantial amount of employment.

Balmacewan golf links and park on the edge of the Sub-region, and a bowling green were important aspects of the recreational geography of the Roslyn-Maori Hill Sub-region.

Two cable tramways and an electric extension along the hill-top linked the Sub-region to the City. Maori Hill was connected to the City only via Roslyn. Thus it tended to be associated with Roslyn rather than to develop a commercial core of its own.

North East Valley.

The North East Valley Sub-region straggled two miles up the North East Valley, from the Town Belt and Botanical Gardens (Fig. 37). The suburb was narrowly enclosed by the hills rising steeply on either side of Main North Road. On these slopes beyond the settled area were extensive farmlands. (Plate 1X).

North East Valley was an intensive industrial area, rivalling South Dunedin for industrial concentration. There was a tannery, a rug and mat manufacturing firm, two steam laundries, a brick kiln and a stone quarry. Although these industries provided a large number with employment, many workers also travelled daily to the City by the slow but inexpensive horse tram. (55)

No single well-defined commercial area existed in the valley. Shops were irregularly spaced along the Main North Road which traversed the North East Valley (Fig. 37). One small group of five shops and a hotel were situated at the entrance to the valley,

55. The cost from the North East Valley to the City was three-pence. Otago Bradshaw 1896. (Published monthly)

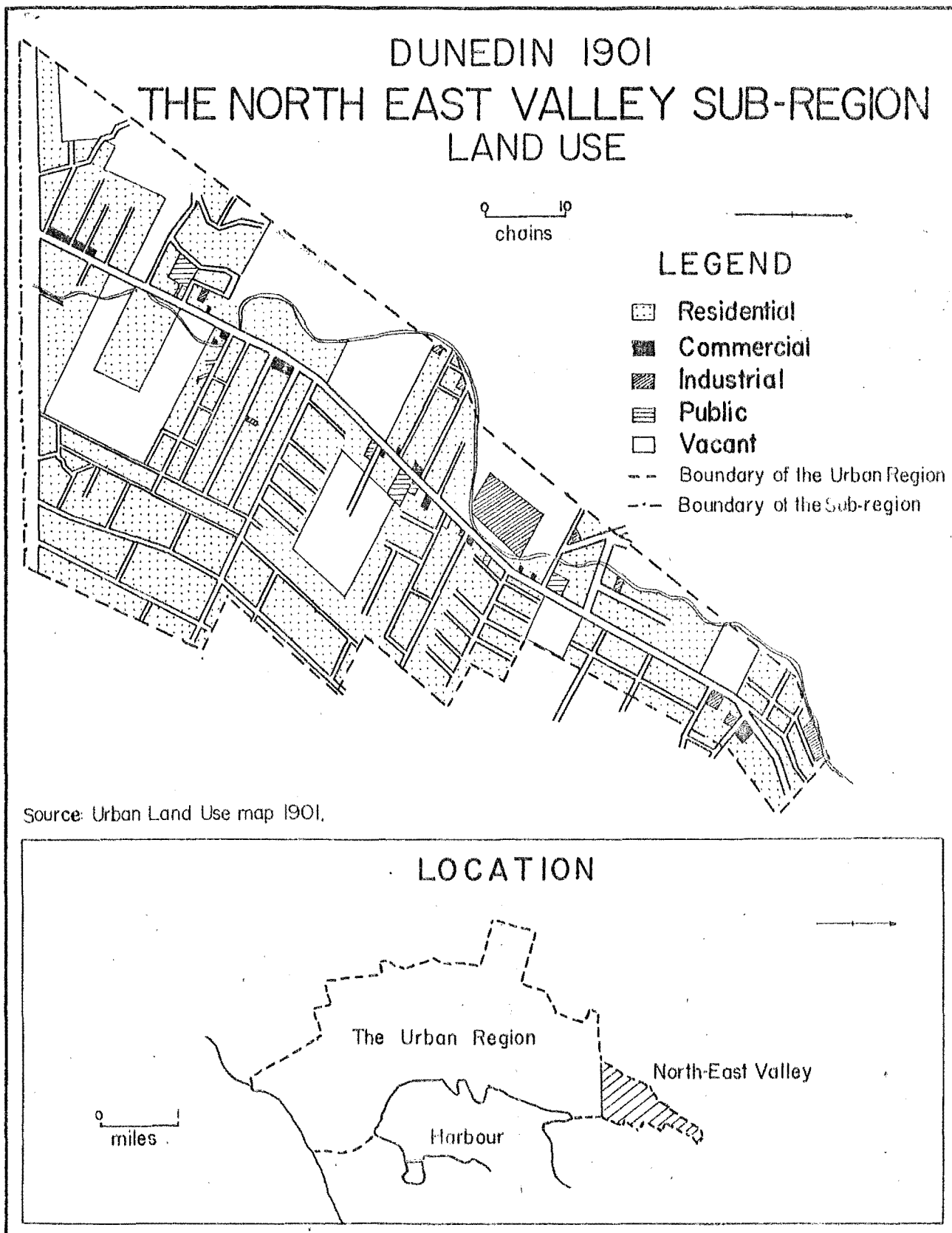


Fig.37.

Plate 1X

The Suburb of North East Valley: This photograph of North Dunedin from Roslyn shows (on the right) the large embayment formed by Lake Logan -- now Logan Park. The straggling settlement of North East Valley winds its way to the north (in the extreme left). In the middle left of the photograph, some of the grand homes can be seen scattered along the Town Belt. In the foreground, are Otago Boys' High School, and the Arthur Street School.

Photograph: Hocken Library



near the Botanical Gardens. Two churches, a school, the large three storey Town Hall with its offices, an hotel and five stores were grouped near the centre of the valley.

It was essentially a workingmans' suburb with only small sections of higher class residences. Sixty percent of the homes in the Sub-region were valued under £250, Class E (Fig. 27). However, unlike the South Dunedin cottages they were not old houses, nor were they of poor quality. There were a few large homes in the North East Valley. Robert Glendinning of Ross & Glendinnings had an estate of eight acres. These residents kept their own stables and travelled by private vehicle to the city. It had always been a popular residential suburb and two blocks subdivided in the 1890's sold quickly.⁽⁵⁶⁾ The Sub-region was connected with the City sewage and drainage system and was supplied with gas from the City Works.

North East Valley, unlike the other Sub-regions but like the City, had its social problem. "At the present time there is a reign of terror in the valley and respectable women are afraid to be out alone after night-fall, a state of matters that cannot be tolerated in a civilised community."⁽⁵⁷⁾ Lack of recreational facilities and youth clubs encouraged gangs of youths to roam the streets where the pale gas light only shaded their nefarious activities.

It is quite evident that each of these Sub-regions that has been discussed had its own peculiar geographic character. The

56. The Cyclopedia Co Ltd., op.cit., p.415.

57. Otago Daily Times, 30th January, 1899.

industrial nature of South Dunedin, the recreational facilities of St. Kilda and St. Clair, the high class residences of Roslyn, and the working class homes of North East Valley were all distinctive parts of the Urban Region. Yet the personality of each of these Sub-regions contributed to the general geography of the whole Urban Region. The Sub-regions were not isolated units but were linked together by the tram and cable car lines which wound through the City. These links worked against the administrative fragmentation that we have already noted as a feature of Dunedin in 1901.

CHAPTER VI

DUNEDIN AND ITS DISTRICT.

Introduction

Three contiguous areas influenced the character of the Urban Region. The first, a Rural Urban Fringe, was not continuous, but existed only in two districts at Andersons Bay and Kaikorai Valley (Fig. 38). The second was a wider Rural Zone of market gardens, orchards, and dairy farms which produced for city demands (Fig. 39). A more extensive Tributary Region lay further away. It supplied primary products and raw materials and in its turn received agricultural machinery, food, and other manufactured goods from the city (Fig. 40).

The Rural-Urban Fringe.

Only the Andersons Bay and Kaikorai Valley areas could be considered as truly transitional between rural and urban land (Fig. 38). Elsewhere, the break between the City and surrounding farmland was distinct. The Roslyn Sub-region has been included within the Urban Region, because it had already been subdivided for residential use, and although there were large vacant areas, these were not used for farming.⁽¹⁾ Houses in Roslyn were listed in the Directory by streets but at Andersons

1. W.T.Neill: Field sheets of the Military Topo: Plan of Dunedin and Suburbs, sheet No. 12, 1901, scale: one inch to 20 chains, Dunedin, Lands and Survey Dept., (unpublished).

DUNEDIN 1901 THE RURAL-URBAN FRINGE

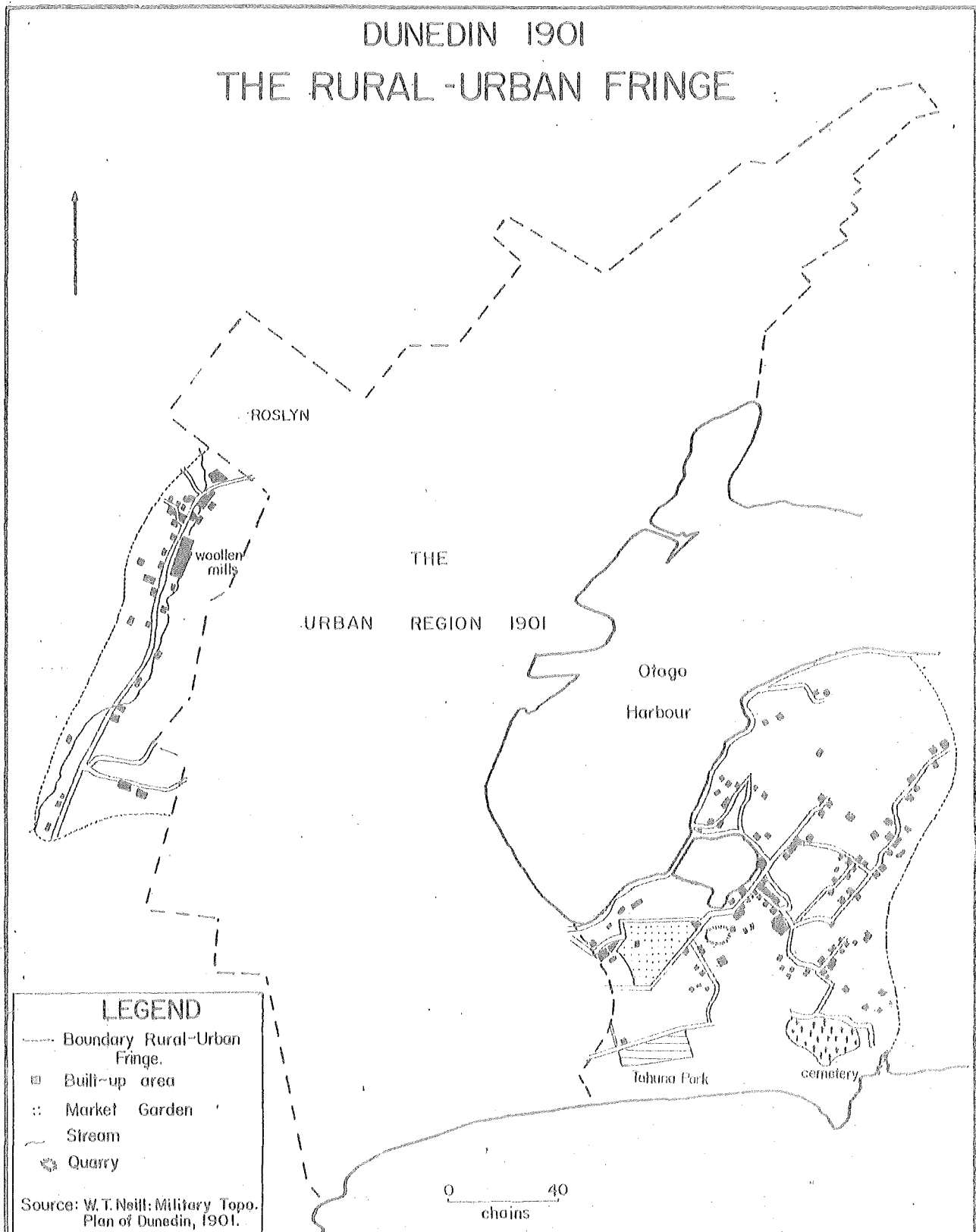


Fig. 38.

Bay (part of the Rural-Urban Fringe): "The residences are too scattered to admit of arrangement in streets."⁽²⁾

Andersons Bay:

Andersons Bay was a dairying and market-gardening area linked closely to the city by transport. A horse-bus ran from Stuart Street every 45 minutes,⁽³⁾ and a ferry sailed regularly from the Dunedin Wharf to the Bay. Many residents listed in the Directory also had business addresses in the city.⁽⁴⁾ Those who wished to be away from the city, to have more extensive grounds, and enjoy pleasant views across the harbour, lived in Andersons Bay.

Although over 200 houses were scattered in the district, no well-defined commercial centre existed. Several stores, an hotel, and a church were located near the intersection of Shiel Hill Road, and High Road.

The only industry was a small shoeing forge. A large Chinese market-garden occupied 15 acres, lending a distinctive character to the district (Fig. 38). The neat rows of cabbages, lettuces, and other vegetables were carefully tended by the Chinese who lived in small huts.

Andersons Bay, with its scattered houses, its farms, and vacant land, was transitional between Urban and Rural uses.

Kaikorai Valley:

Kaikorai Valley was also closely connected to the Urban

2. J. Stone and Co: Otago and Southland Directory 1902, Dunedin, 1901, p.79.

3. Loc.cit.

4. Loc.cit.

Region. Housing expansion in the Valley had been largely in response to its industrial development. The Roslyn woollen mills were built on the Kaikorai Stream (Fig. 38). They utilized the local supply of labour which was supplemented from the Mornington and Roslyn-Maori Hill Sub-regions. About 300 people were employed in the mill,⁽⁵⁾ producing several varieties of cloth, which were either exported as unfinished material, or 'made-up' in Dunedin. Established during the 1880's, by the turn of the century their woollen products were well-known all over the Colony.

The Rural Zone

Surrounding the Urban Region and the intermittent Rural-Urban Fringe, was an extensive Rural Zone predominantly influenced by Dunedin and its needs (Fig. 39). The zone is difficult to define, as it shades imperceptibly into the wider hinterland or Tributary Region. The Rural Zone contained several distinctive geographic regions, including the Peninsula, much of the Taieri Plain, and what may be called the Northern Hills. Within this Rural Zone were several islands of compact settlement, such as Mosgiel, having urban rather than rural features and functions.

The Peninsula:

Land on the Peninsula was not sufficiently fertile to support large-scale cropping. Thus farms were mainly concerned with dairying for the Dunedin milk supply or for

5. The Cyclopedica Co. Ltd: Cyclopedica of New Zealand, Christchurch, 1905, Vol. 4, pp.335-343.

DUNEDIN 1901 THE RURAL ZONE

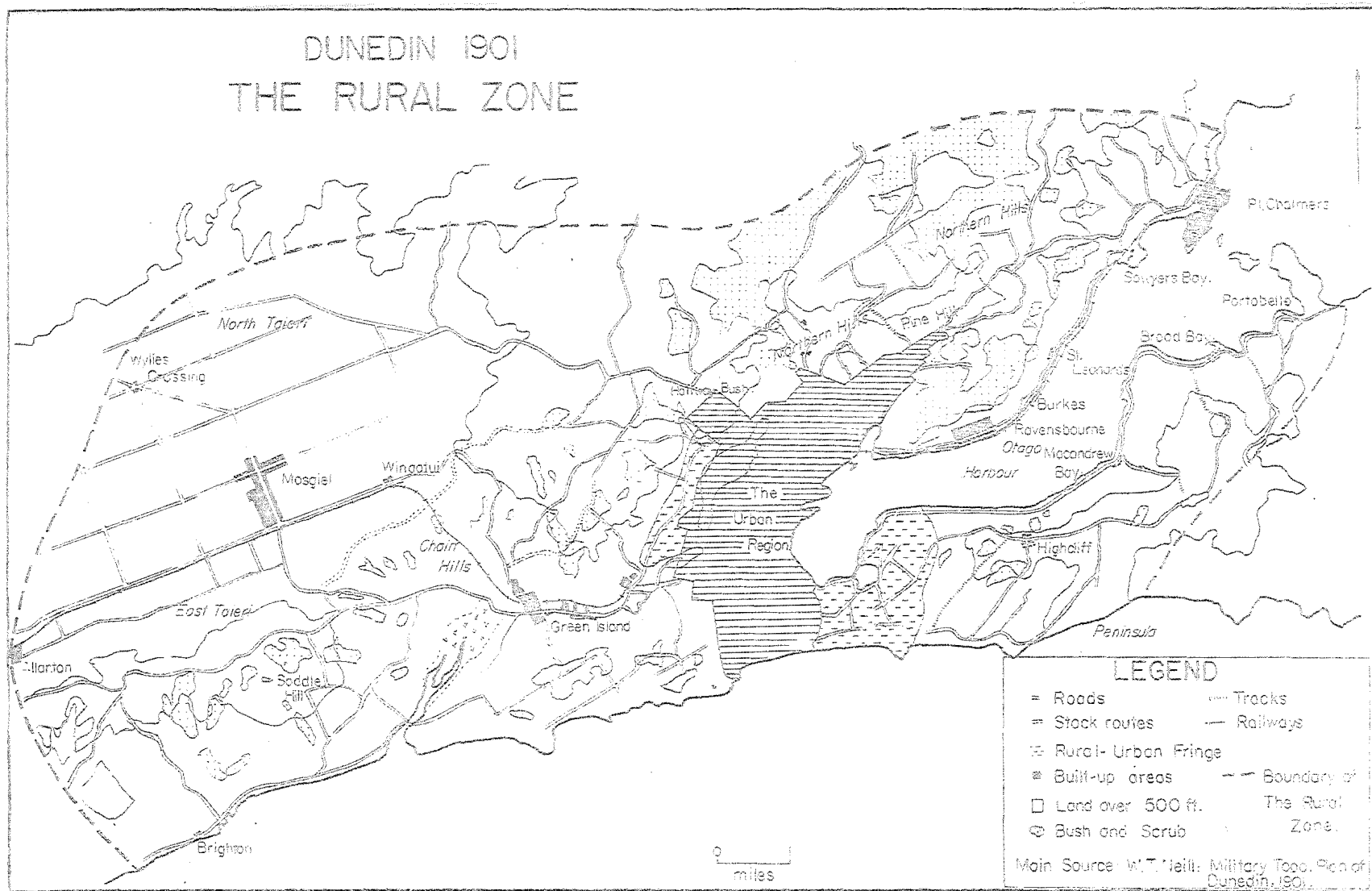


Fig. 39.

butter and cheese making.⁽⁶⁾

Of the five small settlements on the Peninsula - Portobello, Highcliff, Macandrew's Bay, Tomahawk, and Broad Bay - the last named was the largest, with a score of houses, a store, a post-office, and a school.⁽⁷⁾ Many of the farms were clustered near these small service centres.

As well as dairying, there were several market gardens on the Peninsula. Three of these were grouped on the sunny slopes near Highcliff, and sent produce regularly to the Dunedin market.⁽⁸⁾ A horse-bus ran daily as far as Broad Bay. There was also a ferry service to Broad Bay both from the City and Port Chalmers. Needless to say, these settlements had no gas-light, sewage, or any of the 'amenities' of 1901.

The Taieri Plain:

The Taieri Plain was separated from Dunedin by the Chain Hills, but linked by a well-settled⁷ transverse valley which extended from Caversham (Fig. 39). On the Taieri Plain mixed farming predominated. Wheat, oats, barley, maize, peas, and beans, as well as large amounts of fodder crops, including turnips, mangolds, rape, and beet, were grown. Market gardens and orchards extended over several hundred acres.⁽⁹⁾ In the East Taieri were large acreages of orchards, supplying fresh fruit to Dunedin greengrocers and jam factories. Near Allanton dairying predominated. About Wingatui, the emphasis was on

6. The Cyclopedia Co. Ltd: Ibid., pp. 583-590.

7. W.T.Neill: Loc.cit.

8. J.Stone and Co: op.cit., p.238.

9. M.S.Shaw and E.D.Farrant: The Taieri Plain, Dunedin, 1949, pp.210-221.

grain crops. There was also a large pig farm run by Irvine and Stevenson for their St. George meat-canning works in Dunedin. Since 1882, there had been an increase in pasture and crops to fatten stock for the Burnside abattoirs. Properties varied in size between 90 and 500 acres. The surrounding hills were not greatly utilized, as they were largely covered in tutu.⁽¹⁰⁾

Within this agricultural region were several settlements. The largest of these was the Green Island - Burnside - Abottsford complex, occupying the transverse valley which cut through the Chain Hills to the Taieri Plain. The whole complex had a population of about 2,000 people, who worked in the local industries. The abattoirs, cattle-yards, Kempthorne and Prosser's chemical plant, and the freezing-works, were grouped in North Burnside, or 'Cattleyards' the industrial area. The Burnside area proper included three fellmongeries, a tannery using by-products from the freezing-works, a flourmill, and a foundry.⁽¹¹⁾ Along the main road were several shops, including butchers, grocers, a fishmonger, bootmakers, and dressmakers. There was no industry actually located in Green-Island - it was a residential area. Beyond Abottsford there were a fellmongery and two well-established coal-mines. The latter employed 36 men and produced over 13,000 tons of coal annually for the Dunedin market.⁽¹²⁾

A frequent train service connected the area with Dunedin.

10. Otago Daily Times, 3rd November, 1917.

11. W.T.Neill: Loc.cit.

12. Mines' Statement: Appendices to Journals, House of Representatives 1902, (C/3A), Wellington, 1902, pp.33-35.

However, the settlement also existed as a local centre with its own police station, hall, and borough offices.

Several small settlements scattered through the Taieri served the outlying farms. Allanton, with a public hall, a library, and three churches, acted as a small community centre. Some distance from the main railway-line, traversing the Taieri, was Brighton, a seaside resort.⁽¹³⁾

In 1901, Mosgiel, with a population of 1,463,⁽¹⁴⁾ was the second largest of the dispersed settlements within the Taieri region. It had developed from a small service centre with a single street, to an extensive settlement with a grid-iron street pattern and a distinct commercial core.⁽¹⁵⁾ Settlement was focused on the woollen mills, as is evident by the large number of "factory employees" or "machinists" listed in the directory.⁽¹⁶⁾ Housing developed from a core of small cottages (often of brick) built for the mill workers. The settlement was sufficiently developed to support solicitors, an insurance agent, a veterinary surgeon, and a music teacher, as well as the usual stores for food and clothing.

As well as the woollen mills, there was a limited development of small service industries. A dairy factory was supplied by local farmers. Coach-building, making of agricultural implements, and blacksmithing industries serviced and supplied new machinery to the outlying farms. The railway supplied

13. M.S. Shaw and E.D. Farrant: op.cit., pp. 100-105.

14. A. Census of the Colony of New Zealand 1901, Wellington, 1902, p. 23.

15. W.T. Neill: Loc.cit.

16. J. Stone and Co: op.cit., pp. 273-274.

employment for labourers, porters, and carters. Others were employed in road maintenance, at the brickworks, or in the meat-canning factory near Wingatui.⁽¹⁷⁾ Public buildings in Mosgiel included a hall and administrative offices, a school and a police station.

The Northern Hills:

Beyond the Roslyn-Maori-Hill Sub-region, on the slopes above the Kaikorai Valley, and north of the Taieri was a region with more extensive areas of gorse and scrub (Fig. 39).⁽¹⁸⁾ This scruffy landscape, which was utilized for dairying, included the small settlement of Halfway Bush, whose main purpose was to serve surrounding dairy-farmers. A blacksmith's shop, a store, and a school were the focus of the settlement. A few of the city gentlemen had estates at Halfway Bush. William Dawson of Speight's Breweries and J.L.Passmore of Donaghy's rope and twine company had residences there.⁽¹⁹⁾

The Leith Valley cut through this region. Settlement clustered along the road winding through the Valley. Much of this region was a water-shed for the Leith Valley reservoir which supplied part of Dunedin's water.

On Pine Hill - the north-western slopes above North-East Valley - farms averaged 70 to a 100 acres.⁽²⁰⁾ While there were a number of mixed farms, dairying was the most important

17. M.S.Shaw and E.D.Farrant: op.cit., p.212.

18. W.T.Neill: Loc.cit.

19. J.Stone and Co: op.cit., p.223.

20. W.T.Neill: Loc.cit.

activity.⁽²¹⁾ Settlement was scattered mainly along the major roads. There were numerous small patches of bush on the lower slopes, and the upper slopes were extensively covered. Ten local wood merchants, who supplied fuel to Dunedin, had cutting rights on the bush.⁽²²⁾

Between the North East Valley and the settlements of Rothesay - Ravensbourne, St. Leonards, Sawyers Bay, and Port Chalmers, was an area of steep slopes covered so extensively with scrub and gorse that there were only 10 farms in the area.⁽²³⁾ The bush had been more extensive, but by 1901 after cutting and burning, only scrub and gorse remained.

Rothesay - Ravensbourne, Burkes, St. Leonards, Sawyer's Bay and Port Chalmers, formed a discontinuous ribbon along the narrow strip of land at the foot of the hills around the northern side of the Harbour.⁽²⁴⁾ Travelling north from Dunedin, Rothesay-Ravensbourne was the nearest of these settlements and second largest. About 190 houses were scattered along the main road and the several parallel streets. A number of residents were listed as owning business premises in Dunedin.⁽²⁵⁾

The settlements of St. Leonard's, Burkes, and Sawyer's Bay were much smaller. Each had a general storekeeper, who acted as grocer, baker, and butcher. Like Ravensbourne the settlements had sprung up along the rail and road routes north, but

21. The Cyclopedia Co. Ltd: op.cit., p.415.

22. J.Stone and Co: op.cit., p.101.

23. W.T.Neill: Loc.cit.

24. Loc.cit.

25. J.Stone and Co: op.cit., pp.125-128.

they were associated with small local industries. Most of the residents worked in the brewery at Burkes, or the tannery at Sawyer's Bay.⁽²⁶⁾

At the northern extremity of this ribbon of settlement was Port Chalmers, the third largest town in Otago.⁽²⁷⁾ It was described in the Year Book of 1901 as the chief port of Otago.⁽²⁸⁾ However, more vessels visited the Dunedin wharves.⁽²⁹⁾ Indeed, the railway returns for Port Chalmers itself show that it functioned rather as a second port. In 1901, 40,000 tons of general merchandise were handled at Port Chalmers.⁽³⁰⁾ Most of this was railed to Dunedin. However, nearly all the meat was exported through Port Chalmers.

Port Chalmers, as the second port of Otago, played an important role in accommodating those vessels which could not proceed as far as the Dunedin wharves. The tonnages of goods railed to Dunedin indicates the important connexion between the two centres.

Shipping was the "raison d'être" of Port Chalmers, which developed as a port in the eighties and in 1901 was still the chief centre of marine engineering in Otago.⁽³¹⁾ The residents were employed in these industries which were grouped along lower Beach Street. Both the Dunedin engineering company and A. and T. Burts had branches of their engineering works there. Each

26. W.T.Neill: Loc. cit.

27. Oamaru was second largest. Population 4,856; Port Chalmers' population was 2,056.

28. N.Z.Official Year Book 1901, Wellington, 1901, p.592.

29. J.Stone and Co: op.cit., p.787.

30. Railways Statement: Appendices to Journals, House of Representatives 1901,(D/2), Wellington, 1901, p.10.

31. H.O.Bowman: Port Chalmers - Gateway to Otago, Dunedin, 1948, pp.71-112.

shipping company had a repair works, the largest of which belonged to the Union Steam Ship Company.⁽³²⁾ The freezing works were used principally for storage before the meat, butter, rabbits, and fish were exported.

Other industries in Port Chalmers included most of Otago's 13 fish canneries,⁽³³⁾ a branch of the Peninsula and Taieri Dairy Company, and a tannery which worked in association with the freezing works.

George and Beach Streets formed the commercial core.⁽³⁴⁾ The usual food and clothing stores and bootmakers were located along George Street. The post office, Council Chambers, and Marine Department were grouped in Beach Street. Two of the leading banks had branches in Port Chalmers. The connexion with Dunedin was further emphasized by the fact that both Dunedin's daily newspapers were delivered at the Port.

A regular train service ran to Dunedin and ferries connected with Portobello, Anderson's Bay, and Dunedin. The majority of the residents were however, employed locally and did not travel to Dunedin.⁽³⁵⁾ They lived in single storey wooden dwellings of four or five rooms. The local managers who lived outside the town built higher class dwellings.⁽³⁶⁾

The Northern Hills like the Peninsula, was a region of scattered farms and some clustered settlements. Altogether the

32. Loc.cit.

33. Ibid., p.115.

34. J.Stone and Co: op.cit., pp.102-106.

35. Loc.cit.

36. Loc.cit.

three areas, the Peninsula, the Taieri, and the Northern Hills had important relationships with the Urban Region. They produced goods for local Dunedin markets and relied on Dunedin for social and recreational facilities, and for some employment.

The Tributary Region

The influence of an urban area extends beyond its own immediate sphere to that which has been variously called its hinterland, service area, or tributary region. The Tributary Region of Dunedin in 1901 was of great significance because the city was not only a service centre, but also a port, and as such the gateway for goods from both within and without the Tributary Region. From the Tributary Region came raw materials to be processed in the city; from the city manufactured goods and imported articles were sent to the Tributary Region.

Dunedin was situated strategically on the main north and south roads and rail routes, and in a central position for the southern half of the South Island. As a heavy-industrial centre, Dunedin exported products to all parts of the North and South Islands, as well as to the more localized Tributary Region. Shacklock's cooking ranges were known from Auckland to Invercargill. Dredges were built for the West Coast fields as well as Central Otago. Roslyn woollen products were well-known throughout the colony.

Dunedin's Tributary Region⁽³⁷⁾ was a vast agricultural, pastoral, and mining storehouse. On the fertile plains of the Maniototo, Idaburn, Manuhērikia, Upper Clutha, and Taieri (Fig. 40) grain crops such as oats, wheat and barley were grown. Green crops, including peas, beans, turnips and mangolds were also produced.⁽³⁸⁾ The drier hills carried about 1,750,000 sheep.⁽³⁹⁾

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37. Geographers have not yet agreed on any one method of defining the Tributary Region. There are many methods available to the contemporary geographer each with its difficulties. In an historical study, however, the methods so far advanced were not practicable. No field survey was possible, and many of the statistical sources were non-existent.

The method used to define the generalized Tributary Region of Dunedin was based on information in Stone's (J. Stone and Co: Otago and Southland Directory 1902, Dunedin, 1901) and Wise's (H. Wise and Co: N.Z. Post Office Directory, 1902, Dunedin, 1902) Directories. All Otago towns listed in the Directories were prefaced by a short note on their transport connections, with either Dunedin or Invercargill. For example - "Milton - 36m. S.W. from Dunedin. Conveyance per rail. Mails close Dunedin, 7.15, 8.30 a.m., and 3.50 p.m." (J. Stone and Co: op.cit., p. 269). Thus a boundary was drawn including all those towns oriented to Dunedin. This method produced a line which was obviously not a strict boundary, but it does give some idea of Dunedin's 'area of influence in 1901' (Fig. 40).

As a method the procedure outlined above is comparable to the present day method of defining a Tributary Region by transport flow. Also it utilizes a known set of facts recognised by the compilers of the Directory in 1901.

38. New Zealand Official Year Book 1901, op.cit., pp. 591-592.
39. The Annual Sheep Returns: Appendices to Journals, House of Representatives 1901, (H/23), Wellington, 1901, pp. 109-136.

DUNEDIN 1901 THE TRIBUTARY REGION

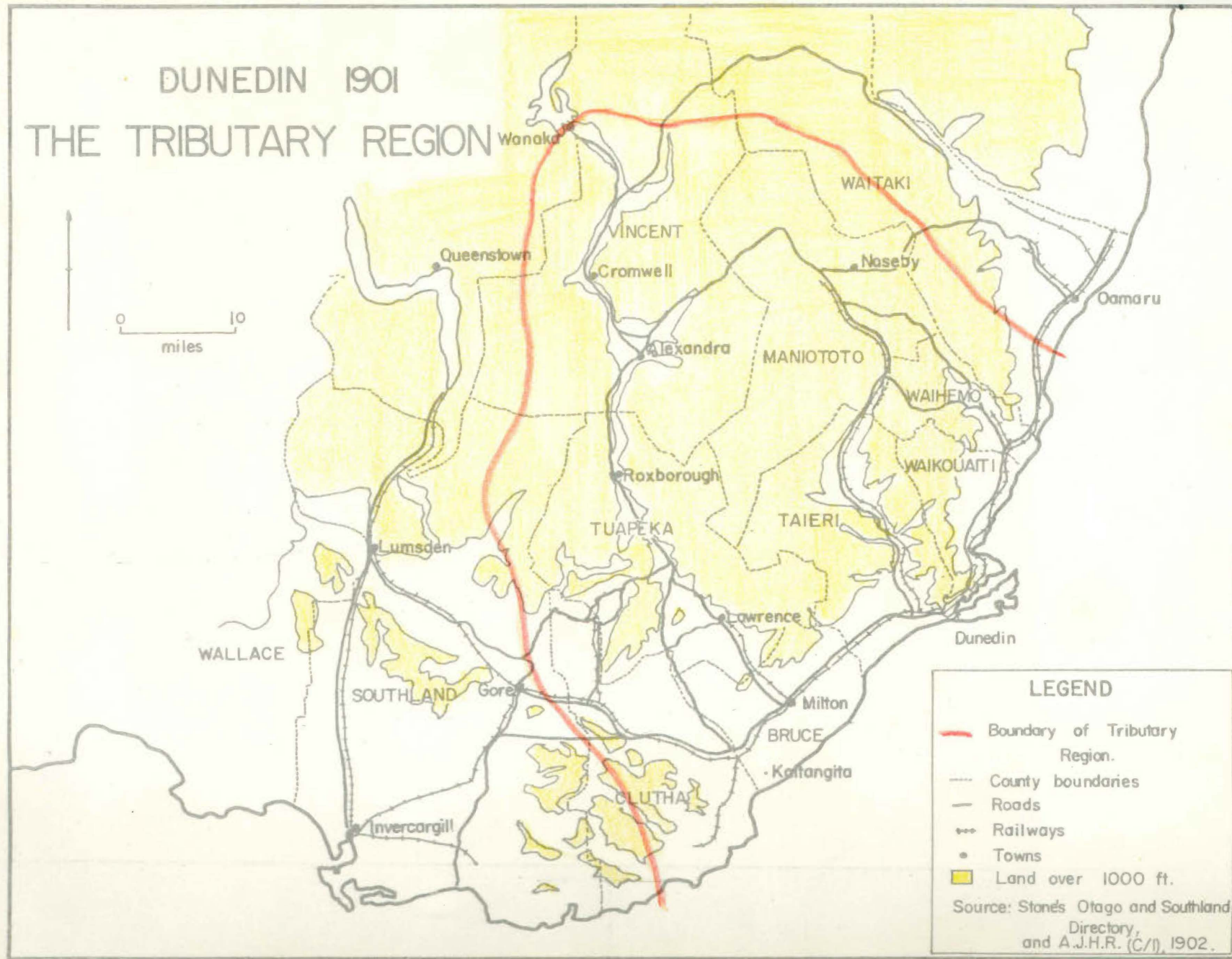


Fig. 40

Between Roxburgh and Wanaka fruit was grown and sent to Dunedin.⁽⁴⁰⁾ The 1901 Year Book stated that the completion of the Otago Central line would bring the Central Otago district into faster connection with the Dunedin market.⁽⁴¹⁾ A steamer ran regularly from Dunedin for 40 miles up the Clutha. At Inch-Clutha a branch of the Peninsula and Taieri Milk Company collected and manufactured butter before re-directing it to Dunedin.⁽⁴²⁾ Several of the small towns produced manufactured articles which were sold in, or exported through Dunedin. The famed Bruce Woollen Mills, a flaxmill and a pottery were located in Milton. Gold valued at £548,484 was exported through Dunedin in 1901.⁽⁴³⁾ Most of this came from the Central Otago fields, from Tuapeka, Cardrona, Bannockburn and (Shotover.) Coal, the other important mineral, came principally from Kaitangita.⁽⁴⁴⁾ *Shore as outside of the river*

The greatest difficulty in supplying the extensive Tributary Region was the transportation of goods. Often rail, water and coach transport were required to take them to their destination. The biggest warehousing firms had branches in the largest towns, from where they supplied the outlying districts.

Although many districts of the Tributary Region were isolated by poor communications it greatly influenced the Urban Region. Dunedin's important clothing industry relied on the products of the Tributary Region. The food industry also was

40. N.Z. Official Year Book 1901, Loc. cit.

41. Loc. cit.

42. Ibid., pp. 592-593.

43. Loc. cit.

44. Mines Statement: Appendices to Journals, House of Representatives 1901, (C/2), Wellington, 1901, p. 5.

heavily dependent on crops grown in the hinterland. Thus the Tributary Region played its part in influencing the Urban Region in 1901.

The consideration of the Rural-Urban Fringe, the Rural Zone and the Tributary Region places Dunedin in its regional setting. Thus the city has been considered as a functional unit against the wider background of farm and province.

CHAPTER VII

THE CHARACTER OF DUNEDIN IN 1901.

In the "Otago Daily Times" of March 3rd, 1900, a stranger to Dunedin wrote: "Dunedin appears to be in a transitory stage between provincial and metropolitan days,.... the stranger is not yet expected to be an ever-present factor in the city's life stream, he is coming through and will be studied in times to come."⁽¹⁾

In Dunedin were features representative of a past era; and yet the city stood on the threshold of a new one. There were both horse and electric trams; the new cinematograph productions had just begun; and the motor-car and truck had not yet appeared. Even with almost 50,000 people, Dunedin was only half the size of the city to which it would grow sixty years' later.

The unique character of Dunedin derived from its site and layout, from its history, and from its varied functions and urban sub-regions. The hills surrounding and overlooking the harbour, the steep valleys running down from the Town Belt, the "quaint climbing streets",⁽²⁾ and the newly reclaimed areas along the foreshore, all helped contribute to the overall character of Dunedin.

Dunedin's dominant industrial structure, together with its cultural development, contributed further to the city's character.

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1. Otago Daily Times, 3rd March, 1900.
 2. Otago Daily Times, 20th March, 1899.

At the sametime, the commercial and professional aspects of Dunedin were important to the smooth functioning of the heavy engineering industries, and clothing factories, and to the city's personality.

Each of the sub-regions analysed in Chapter V contributed in small part to the total geographic character of Dunedin. The compact Sub-region within the Town Belt was made up of a bewildering variety of housing classes and styles. The focus of this Sub-region, and indeed of the whole of Dunedin was the complex Central Business District. The outer suburbs varied in character from the industrial suburbs of South Dunedin and North-East Valley, to the residential Sub-regions of Mornington, Roslyn-Maori Hill, and St. Clair. St. Kilda gained its special character from the recreational facilities in the Sub-region.

The whole Urban Region was interrupted by the semi-circular Town Belt, and by small parks and gardens.

People, as much as buildings and functions help give character to a city. The Dunedin citizen was essentially conservative. Travellers remarked on the "air of staidness and conservatism suffusing the town."⁽³⁾ Many were impressed by the importance of the church in the life of Dunedin. Yet the air of middle-class respectability and religious observance could not disguise the slums of Walker and Stafford Streets, where the Chinese had their gambling dens and opium houses. As one writer remarked: "ignorance is likely to create a false impression as to the moral atmosphere of parts of the city."⁽⁴⁾

3. Otago Daily Times, 3rd March, 1900.

4. Otago Daily Times, 3rd May, 1900.

Other aspects of the character of Dunedin in 1901 emerge when Dunedin is compared first, with New Zealand at the turn of the century, and second, with Dunedin in 1961.

The Turn of the Century

The urban scene was dominated by the four main cities - Auckland, Wellington, Christchurch, and Dunedin. As one visitor to New Zealand remarked, however: "there is no overgrown head as is presented by Sydney or Melbourne with a disproportionately small tail."⁽⁵⁾ Cities differed little either in size or in the provision of services. While Wellington might have had a better sewage system, Dunedin managed its tramways more effectively.⁽⁶⁾ But Dunedin had passed through its great period of commercial supremacy. Its geographic position was bound to throw it out of competition with Auckland or Wellington sooner or later. Even so, these northern centres had not totally eclipsed Dunedin. It still exported more woollen goods than all other centres. It was third in New Zealand in total imports. Auckland, Christchurch, and Dunedin were also approximately equal in industrial functions. Each of these cities had between 16 and 18 percent of the total employed in manufacturing industries in New Zealand in 1901.⁽⁷⁾

The whole human geography of New Zealand was changing at the

5. Otago Daily Times, 20th March, 1899.

6. Otago Daily Times, 28th July, 1900.

7. G.J.R.Linge: 'The Geography of Manufacturing in N.Z. 1840-1936', Proceedings Second Conference N.Z. Geographical Society, Christchurch, 1958, p.47.

turn of the century. Standards of living were rising, production was increasing, (particularly in the Waikato lands which were in the process of development), and small towns were rapidly growing in population. Dunedin was enjoying this prosperity and economic development. The time had not yet come when Dunedin would be outstripped by the rapidly developing cities of the North Island.

1901 and 1961

A comparison of Dunedin in 1901 with Dunedin 60 years later, highlights certain features of its early character.

The turn of the century was the era of gas lamps, horse transport and unsealed roads; it was also marked by a lack of sewage and good sanitary arrangements. More intangible contrasts between 1901 and 1961 were the closeness of the family ties at the beginning of the century, and the sombre Victorian dress.

Much of Dunedin has not changed in 60 years. "Urban patterns come into being in various ways, but once established it is only rarely that they can be fundamentally changed."⁽⁸⁾ Princes and George Streets and the Exchange area aptly illustrate this principle.

The greatest changes in the past 60 years have taken place along the foreshore, where a large area has been reclaimed. The present bulk storage sheds and the oil tanks are located on land

8. P.E.James: Vicksburg, 'A Study in Urban Geography', Geographical Review, Vol. 21, 1931, p.235.

reclaimed since 1901.

There has not been the spectacular growth of industry which has been experienced by the Auckland and the Wellington-Hutt Regions. In 1959 there were more industrial units and workers in Dunedin than there were in 1901. But while the population has almost doubled, the number of workers in industry has increased by only half, from 8853 to 13,400.⁽⁹⁾ There has been an increase in the size of factories and in the number of light secondary industries; however, the Hillside workshops are still an important railway industry. Many of the head offices of large New Zealand firms, formerly located in Dunedin, have been moved to Wellington or further north, to be nearer to the region of greatest sales. Yet Dunedin is still a producer of woollen goods and various foodstuffs.

The location of the main industrial areas has not altered since 1901. The industrial complexes near the central business district, in the South Dunedin area, and in the Kaikorai Valley are still the prominent industrial zones. The economy of Dunedin in 1901 was based on meat, wool, and gold and though very little gold is now exported, meat and wool are still the principal products.

The change in modes of transport after 1901, more than any other single factor, has been responsible for altering the character of the city. As a result the streets of Dunedin

9. Report of the Dept. of Labour: Appendices to Journals, House of Representatives 1960, (H/11), Wellington, 1960, pp. 43-44.

have become filled with cars, buses, and heavy trucks. The speed and efficiency of business and industrial connections have been increased. Principally, however, the increased efficiency of transport has meant that the city could expand, and worse, that it could sprawl along the roads leading from the city. City dwellers, with faster transport have been enabled to live much farther from their place of work.

While Dunedin has not remained the chief manufacturing city, she is still the "Edinburgh of the South", a centre of educational, literary and artistic life.

"At a time when the gospel of materialism was a vindication of the principle of utilitarianism, Otago had more to offer than the Clutha's golden stone. The birth of the social services, humanitarianism, and a nobler conception of the spirit of Christianity and its application to the ends of the masses are features developed in Dunedin not to be discounted."(10)

To see the contrasts between Dunedin in 1901 and 1961 is of more than academic interest. It leads to the most important aspect of historical geography, an understanding of the past to assist in the solution of contemporary problems. Yet a knowledge of the past does not seem to have endowed the present generation with a better vision of the future. Indeed the failure to look ahead seems almost to have been a general failing of local bodies in Dunedin; for example, as early as 1872 proposals were mooted for a new drainage scheme. In May 1900 when at last the chance came for its acceptance it failed to gain the required number of votes.(11)

A general lack of planning may have been excusable in 1901; but can it be excused 60 years later?

10. A.H.McLintock: A History of Otago, Dunedin, 1949, p.689.

11. Otago Daily Times, 28th July, 1900.

APPENDIX I

THE URBAN LAND USE MAP

(in separate case)

This map is divided into six sheets to facilitate study. An index map is provided to locate the sheets. The method of compiling the map is outlined in the Introduction.

APPENDIX IITHE POPULATION OF THE URBAN REGION

Population figures published by the Department of Census and Statistics for 1901 are given only for Dunedin City and the Suburban boroughs. The total population of the City and Suburban boroughs was 50,925. The population of the Urban Region as defined in this thesis was 47,400 or 93 per cent of the Census total. The breakdown of the population data for the Urban Region was obtained by taking 93 per cent of the detailed figures of Dunedin City and Suburban boroughs. The assumption was that the population structure of the areas outside the Urban Region (but within the boundary of Dunedin City and Suburban boroughs) was the same as the structure of the Urban Region. This assumption seems reasonable because the 7 per cent of the population living outside the Urban Region were concerned mainly with Urban functions. It would therefore seem that the small per centage of the population employed in Dunedin City and Suburban boroughs in farming is not likely to have affected the population structure markedly.

APPENDIX IIITHE EMPLOYMENT STRUCTURE OF DUNEDIN IN 1901

It would seem that the number of workers employed in manufacturing industries in the Urban Region in 1902 can be determined. (The method by which this number has been calculated for this thesis is discussed in Appendix IV). The number of workers employed in the Dunedin Urban Region in manufacturing industries in 1901 was 8,353 or 35 per cent of the total number employed in manufacturing industries in Otago. In order to estimate the numbers employed in commercial, personal service, professional, and transport functions in the Urban Region in 1901, 35 per cent of the Otago Provincial figures for commercial, personal service, professional and transport functions was calculated. As farming was not an economic activity in the Urban Region, farming workers were not considered. The results of this calculation gave a total of 17,868 gainfully employed workers in the Dunedin Urban Region.

This method seems to be the best way of gaining some idea of the relative importance of the employment structure of the Dunedin Urban Region in 1901. As Dunedin was the focus of Otago Province it might be expected that the number of professional workers in Dunedin should have accounted for more than 35 per cent of the Otago total of professional workers, however, a careful study of Stone's Directory for 1901 suggests that the figure of 35 per cent of the Otago Provincial figures is realistic.

APPENDIX IVMANUFACTURING EMPLOYMENT IN THE URBAN REGION

The employment figures given for manufacturing industries in Dunedin in 1901 in the Appendices to Journals, House of Representatives (H/11) 1901, apply to Dunedin City and Suburban boroughs and not to the Urban Region as defined in this thesis. To establish the number employed in manufacturing in the Urban Region, the workers who were employed in industries listed in the A.J.H.R. outside of the Urban Region were deleted. Two examples will serve as illustrations.

The A.J.H.R. lists 200 workers employed in woollen manufacturing in Dunedin; however, there were no woollen factories in the Urban Region so these 200 were deleted from manufacturing employment figures in this thesis. Again only one fellmongery was located in the Urban Region in 1901. The number of workers employed in that factory was discovered from The Cyclopedia of New Zealand¹ and this figure has been taken as applying to the whole Urban Region.

The same technique was used in order to calculate the number of workers in all other types of manufacturing in the Urban Region.

The final figures for employment in the various branches of industry in the Dunedin Urban Region in 1901 are as follows:-

1. The Cyclopedia Co. Ltd. The Cyclopedia of New Zealand, Christchurch, 1905, Vo. 4.

Engineering and Iron industries	2,297
Clothing manufacturing	2,226
Food industries	1,052
Woodworking	576
Leather industries	540
Printing industries	473
Other - Heavy Noxious industries	489

gas making, chemical manufacture
 fellmongery, tanning, cement
 manufacture, brick making,
 plumbing and tinsmithing.

- Light secondary industries 700

This group includes all the
 industries listed in the A.J.H.R.
 (H/11) 1901 not mentioned above.

APPENDIX VTHE PORT OF DUNEDIN

In the Statistics of the Colony of New Zealand,¹ returns are given only for the Port of Otago. It is not clear whether these figures refer to Dunedin or Port Chalmers, or both. McClintock in the Port of Otago² does not solve the problem. It seems from a figure in Stone's Directory, that most vessels did proceed to the Dunedin wharves and unload there. However, Port Chalmers was the main port for overseas shipments of frozen meat, whether or not the vessels discharged at Port Chalmers or not, the goods were eventually railed to Dunedin. The figures in the Statistics of the Colony of New Zealand have been taken as referring to Dunedin.

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1. Statistics of the Colony of New Zealand 1901, Wellington, 1903.
 2. A.H. McClintock. The Port of Otago, Christchurch, 1951.

APPENDIX VIREILLY'S LAW OF RETAIL GRAVITATION

Originally the intention was to subdivide the Dunedin Urban Region of this thesis into a number of Sub-regions based on both formal and functional criteria. The formal criteria are those that have been used - natural boundaries, population density, housing value, community facilities, and the amount of industry. The functional differentiation was to have been based on the service areas of local shopping centres, using Reilly's Law of Retail Gravitation.¹ However, the objectivity necessary with such an approach was not possible in an historical study.

The investigation of these sub-regions or neighbourhood units is in part an investigation of the service areas of local shopping centres, as was suggested by Dickenson.² There are several methods available for delimiting these sub-regions. A house to house survey would account for purchases made in one centre rather than another, thus locating those areas predominantly oriented to one centre. A development of Reilly's Law of Retail Gravitation " - gives another method of defining these areas. The Law states that: the relative

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1. American Society of Planning Officials: Economic Analysis of Market Areas for Shopping Centres, Chicago, 1952.
 2. R.E. Dickenson: City Region and Regionalism, London, 1947, p. 147.

drawing power of any two cities is directly proportional to the size of the cities, and inversely proportional to the square of the distance apart. Thus two adjacent cities of 30,000 population thirty miles apart, would each have a market area extending to the mid-point 15 miles from each. If one city had a population of 10,000 and the other of 50,000, the market area of the smaller would extend only 12.6 miles toward the larger one. The larger one would extend 17.4 miles toward the smaller³. This method has been extensively used by the American Society of Planning Officials in market surveys to establish the most satisfactory location of shopping centres. There does not seem any reason why this law cannot be adapted to define the "trade areas" of small shopping centres. The number of shops, or more accurately, the number of workers would be a good measure of the importance of the centre.

It is by no means certain that such units would reflect any particular social cohesion or even a proof that the sub-region was self-contained. Although the Stephenson's⁴ suggest that such areas are a reality, A.E. Smailes has written: "Neighbourhoods conceived as areas endowed with a degree of self containedness possessing within their limits the institutions used by their residents and inhabited by commun-

3. American Society of Planning Officials: op.cit., p. 2.

4. F. and G. Stephenson: Community Centres, Housing Centre, London, 1942, p. 31.

ities that carry out their primary and social activities within the boundaries of their own territory, hardly exist."⁵ Smailes emphasizes the importance of intra-urban movement.

The truth no doubt lies somewhere between the two theories. A measure of social cohesion does exist, even if given only by the socio-economic position, of the people in a particular locality.

To make this sub-regional ~~or~~ 'neighbourhood' approach more satisfactory and lessen its disadvantages, a study of the connections between sub-regions would be necessary. Rannels, in his study of The Core of the City⁶ has suggested a possible method for measuring connections between areas. This has yet to be developed, but may, in association with neighbourhood units be a more integrated approach than that of considering each functional type separately.

5. A.E. Smailes: The Geography of Towns, London, 1953, p. 134.
 6. J. Rannels: The Core of the City, New York, 1956.

APPENDIX VIIRESIDENTIAL CLASSES

To determine the various classes of housing in Dunedin in 1901 the value of improvements only, was used. This is a more accurate measure than using capital value which includes the value of the section. By using the value of improvements the anomaly of a small house on a large section with a high value, is avoided. A more accurate measure would have been to use the value per square foot of houses. However this figure was not available for 1901.

To gain some idea of the relative value of houses in 1901 as compared with 1961, Mr. W. Rosenberg of the Economics Department, Canterbury University, suggests that multiplying the 1901 value by four, would give an approximate equivalent for today. Thus a £1,000 house in 1901 might be thought of as a £4,000 house in 1961. However, it must be realized that a £1,000 house possibly represented a value of more subsistence in 1901 than a £4,000 house today. If this is borne in mind, a multiplication factor of four is not too inaccurate.

A NOTE ON THE CONSTRUCTION OF FIG. 10,FIG. 27, AND FIG. 30.Fig. 10.

To produce the population density map of the Dunedin Urban Region in 1901, the average number of people per house in each ward (the smallest census division) was determined from the N.Z. Census for 1901.¹ The average number of people per house was then multiplied by the number of houses in each street block (number of houses per block shown on Urban Land-use map, 1901) giving a population figure for each block. The area of the blocks was calculated (from linear measurements) and the density per acre then established.

Fig. 27.

The map of Residential Classes in the Urban Region 1901 has been generalized from a more detailed map produced by going through the Valuation Rolls² and noting the value of improvements for every property in the Urban Region.

In any of the areas on the map at least 80 per cent of the houses are of the value indicated.

Fig. 30.

The map of Slum Buildings in the Urban Region in 1901

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1. A Census of the Colony of N.Z., 1901, Wellington, 1902.
 2. Valuation Rolls for the boroughs of Dunedin City, Caversham, Mornington, Maori Hill, North-East Valley, Roslyn, South Dunedin and St. Kilda, 1899-1902, Valuation Department, Dunedin.

was drawn from information in the Otago Daily Times newspaper for the 8th and 13th June, 1900.³ Fifty-three slum buildings were described and from the descriptions it was possible to locate them either in Stone's Otago and Southland Directory⁴ or in the Valuation Rolls.⁵ The buildings were then plotted. (Fig. 30)

3. Otago Daily Times.

4. J. Stone and Co. Otago and Southland Directory 1902,
Dunedin, 1902.

5. Valuation Rolls. loc.cit.

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